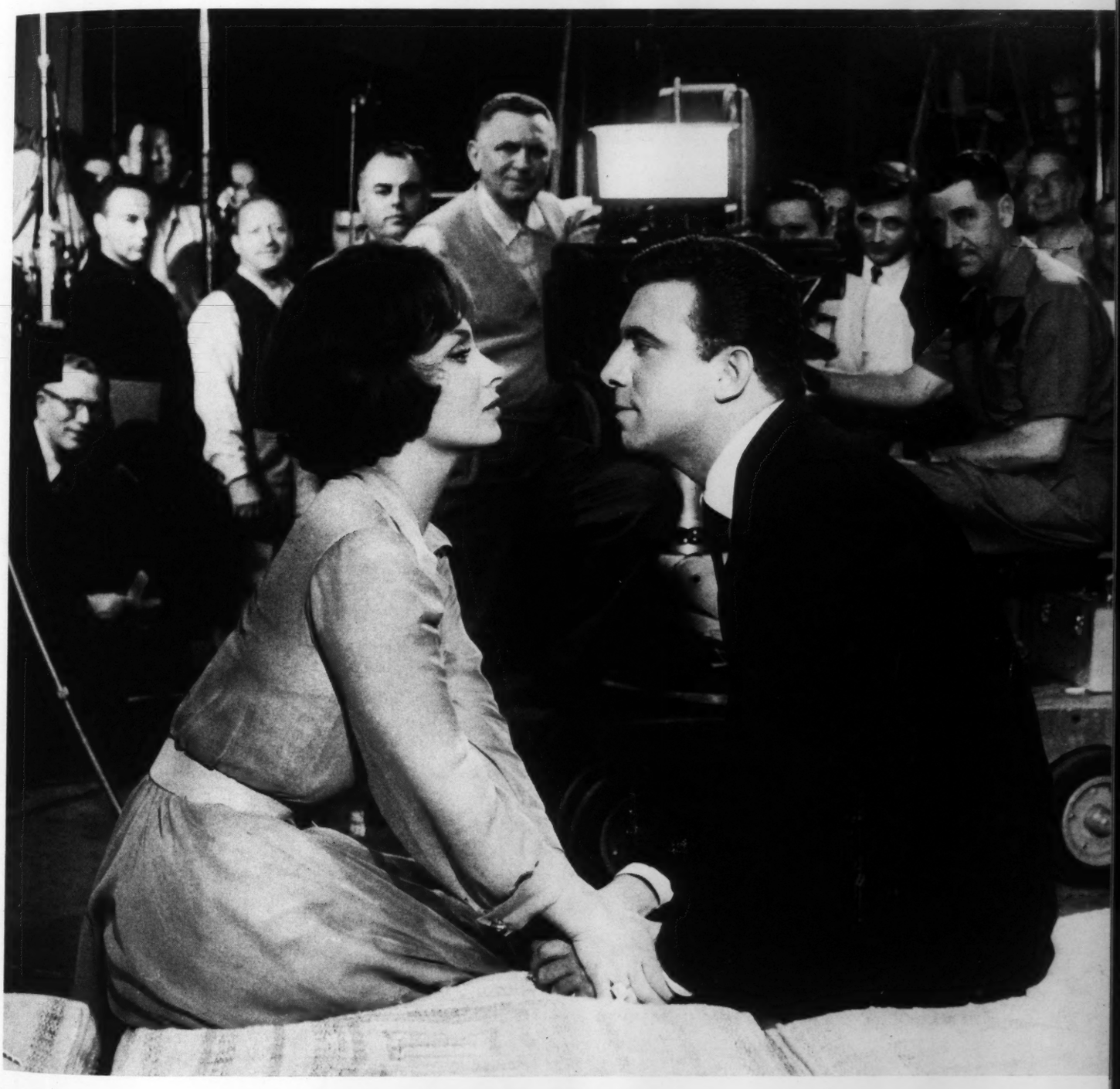
AMERICAN

Cinematographer

MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

AUGUST, 1960 • 35¢



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- Japan's Master Of Monsters
- Modern Approach To Film Titling
- Low-down On The New Double-X Film

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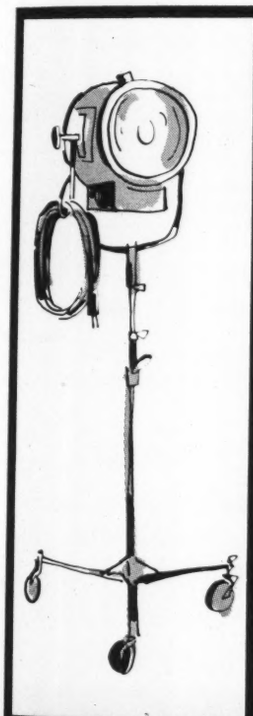

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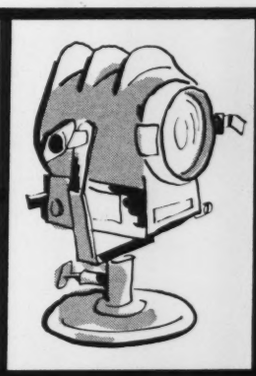

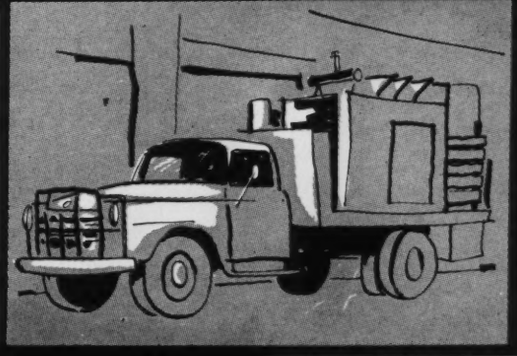

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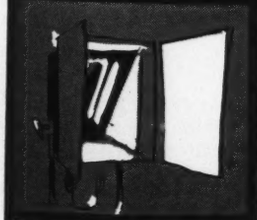

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AMERICAN

Cinematographer

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August, 1960 **Vol. 41, No. 8**

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ON THE COVER

MILTON KRASNER, ASC, (left of camera) directs the photography of final scene for MGM's "Go Naked In The World," starring Gina Lollobrigida and Anthony Franciosa (in foreground). Ranald MacDougall, who directed picture, stands immediately behind operator at right of camera.

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FOUNDED January 8, 1919, the ASC was established to advance the art and the science of cinematography; to encourage, foster, and strive for preeminence, excellence, artistic perfection and scientific knowledge in all matters pertaining to cinematography; to bring into closest confederation those leaders in the cinematographic science whose achievements in that field entitle them to membership in the Society; and to promote the interests of all who shall be called to membership in the ASC, that such membership may become a mark of honor and distinction based on merit.

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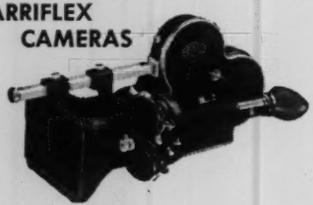

16mm and 35mm cameras in stock for immediate delivery. Arriflex 35mm sound-proof blimps available. 400' magazines, synchronous motors, new and used.

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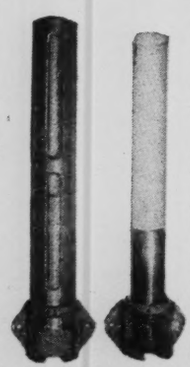

Simply attach the dispenser to wall to keep plastic lab cores handy at all times.

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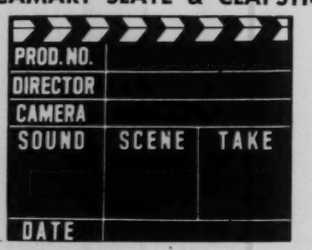

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INDUSTRY NEWS

News briefs of industry activities, products and progress

ABC-TV To Produce Own Television Films

ABC-TV, which has looked to the major Hollywood studios to supply its film programming needs, early this month decided to enter production of its own filmed shows, as is already being done by NBC and CBS.

Heading the operation will be Selig Seligman, formerly Vice-President of KABC-TV, Los Angeles. It was Seligman who originated and produced "Day In Court" series on film for KABC-TV.

★

Mitchell Camera Co. In Marketing Deal With Britain's W. Vinten, Ltd.

The Mitchell Camera Corporation of California and W. Vinten, Ltd., of London, England have completed arrangements to utilize their joint resources to promote and sell each other's products. Both companies are leading manufacturers of professonal motion picture cameras and related equipment.

It is contemplated that Vinten's London manufacturing facilities will be utilized for the manufacture of Mitchell Products and to provide first class servicing in London of Mitchell equipment.

★

Six Experimental Films Win Creative Film Awards

The Creative Film Foundation, New York, announced early last month that its Directors had voted six Awards of Distinction and three Special Citations as its 5th Annual Awards to films concerned primarily with the exploration of the medium as a fine art form. The award certificates will be presented formally to the winners at a public function in late fall, at which time the winning films will be screened.

The winners are: Robert Breer, New York, for "*Inner and Outer Space*"; Jane Belsen Conger, San Francisco, for "*Odds and Ends*"; Bruce Connor, San Francisco, for "*A Movie*"; Carmen D'Avino, New York, for "*A Trip*"; Ed Emschwiller, New York, for "*Life Lines*"; and Stan Venderbeek, New York, for "*Science Friction.*" Special Citations were voted to Mr. Emschwiller for another entry, "*Transformation*"; to Richard Preston, New York, for "*May 2nd, 1960*"; and to Vittorio Speich, Holland, for "*Metrographic.*"

The Annual Creative Film Awards were established in 1956 by the Creative Film Foundation, 35 Morton St., New York, N.Y. Purpose of the foundation, according to its Directors, is to encourage contributions toward and the development of film as a fine art form.

★

ASC Announces Revised Title For Its Forthcoming Handbook

The completely new handbook for motion picture cameramen, which has been in preparation by the American Society of Cinematographers, and previously announced under the title of *A.S.C. Photographic Manual*, will come off the press bearing the new and more descriptive title, *American Cinematographer Manual*. New title, the editors believe, more readily relates the book's contents to the field of cinematography.

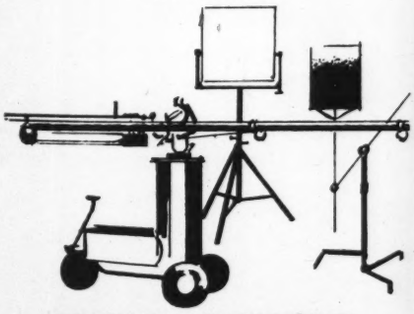
★

Trade Notes

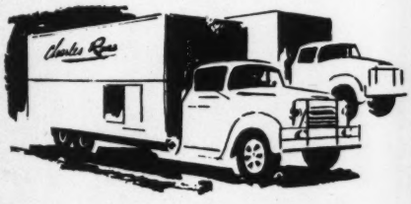
On July 1st, *Bausch & Lomb Optical Co.*, Rochester, N.Y., became known officially as *Bausch & Lomb, Incorporated*. New name, which was recently approved by company stockholders, recognizes the fact that B & L is not restricting its research and manufacturing interests to the field of optics alone . . . *James H. Hanley*, recently Assistant to the President of Pathe Laboratories, has joined the Consolidated Film Industries organization in Hollywood as Special Assistant to General Manager, Sidney P Solow . . . *Philip A. Hunt Co.*, largest exclusive manufacturer of photographic and graphic arts chemicals in the country, has added to its expansion program by initiating construction of a chemical manufacturing plant and general offices at Palisades Park, New Jersey . . . *Capital Film Laboratories, Inc.*, Washington, D.C., last month opened its New York office in the Paramount Bldg. at Times Square . . . *G. B.-Kalee Division* of Rank Precision Industries, London, will distribute *Birns & Sawyer* products in England . . . *Traid Corporation*, Encino, Calif., which has been western distributor for certain *Bell & Howell* military products for past five years, has been appointed nation-wide distributor by Bell & Howell.

...you'll find Charles Ross

LIGHTS



GRIP EQUIPMENT



GENERATOR TRUCKS

1600, 1000, 700, 300, 200 Amp. D.C.
100, 50, 30, 20 Amp. A.C.

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Man and his camera are only as good as the equipment backing him up... that's where CHARLES ROSS "shines". Assure yourself of the right lighting and grip equipment for every job from one of the *largest inventories in the east*... a moments notice starts anything from a powerful generator truck to a director's chair on its way to your location. Enjoy all the convenience, savings and dependability that our 39 years of leadership can give you... in the motion picture, TV and Industrial fields.

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CAMART TIGHTWIND ADAPTER

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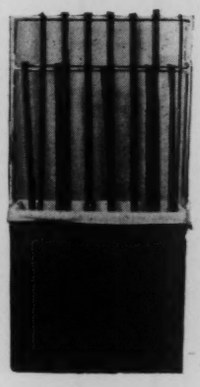

NEW DESIGN FILM BIN WITH RACK

★ Rectangular Construction 30″x24″x12″.
★ Fits easily into corners.
★ Easy to view strips of film.
★ Hard vulcanized fiber with reinforced metal frame.
★ Complete bin-rack, linen bag $45.25
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Cleans, conditions, and lubricates film in one easy operation. Non-inflammable, eliminates waxing, absolutely safe.

Ecco Applicator $33.00

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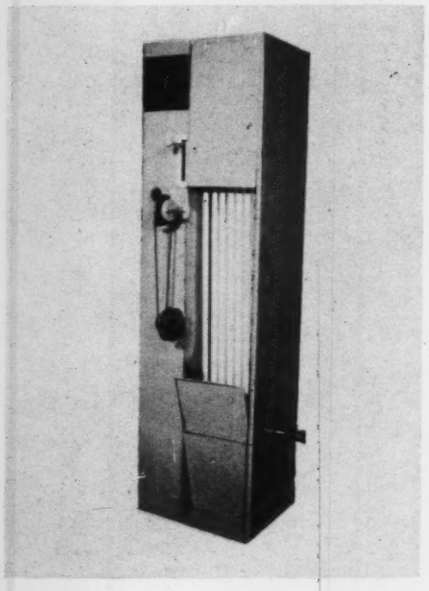
WHAT'S NEW

in equipment, accessories, services



Film Processor

An all-purpose film processor for Ektachrome ER, Ansco-Color, B&W reversal, negative and positive films is announced by Morris Film Processor, 1611 So. Boston Ave., Tulsa, 19, Okla.

Small and compact, it operates in a continuous loop, and uses a minimum of chemicals. There are two models: the X-100, 12″x12″x48″ in size, which weighs but 45 lbs., uses only a quart of chemicals, and lists for $425.00; and the X-400, 24″x 26″x72″ in size. This unit weighs 125 lbs., requires a gallon of chemicals, and sells for $775.00.

★

Analyst Projector

Camera Equipment Co., 315 West 43rd St., New York, N. Y., announces a new, improved modification of the CECO-Weinberg-Watson 16mm Analyst Projector. Features include flickerless projection regardless of speed of operation; variable speeds from 2 to 24 fps, both forward and reverse; and an electrically-operated single-frame advance, which also operates both forward and reverse.

Projector can be operated by remote control, with the controls centered in a control box attached to extension cord. Projector takes 400-ft. reels as standard equipment, but 1600-ft. reels and a continuous loop attachment are available as accessory equipment. Lens is two-inch f/1.6; lamp is 750-watt; and motor operates from 110-v 50-60 cycle current.

★

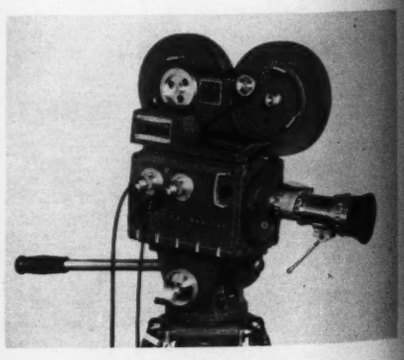
Video Tape Reels

Hollywood Film Co., 956 No. Seward St., Hollywood 38, Calif., announces two new high-impact plastic video tape reels 6½″ and 8″ in diameter. Reels are manufactured according to NAB and proposed SMPTE standards and provide economical method of shipping video-taped commercials. The 6½″ reel and corrugated shipping container weighs 10 ounces; the 8″ reel with container, 14 ounces.

★

Film Splicer

Rowe Line Corp., 7731 E. Vandorf St., South San Gabriel, Calif., announces its new E-Z 16mm film splicer that makes splices that are invisible, durable and accurate with the aid of perforated plastic splicing tabs which are used with the splicer. Features claimed are quick automatic alignment of film and splicing tape; unnecessary to fold or touch splicing tape; precision all-metal construction; hardened and ground film cutter blades; and spring-steel film alignment pins. List price is $39.95.



New Pro-600 Special

Bach-Auricon, Inc., 6900 Romaine St., Hollywood 38, Calif., announces

Continued On Page 460

in the east . . . it's

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for color* and black & white

MOVIELAB FILM LABORATORIES
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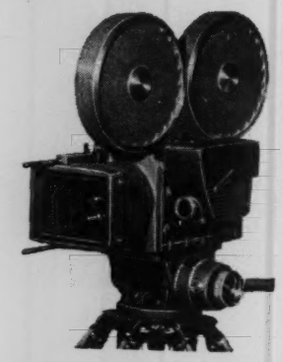

AURICON PRO-600 AND SUPER-1200

Single system 16mm sound on film cameras. Latest model Cine-Voice II sound cameras. TV Kinescope shutters, new and used in stock.

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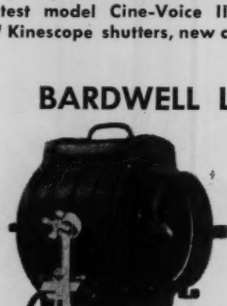

High power unit for black and white or color.

Same lights the Hollywood professional uses.

$81.00

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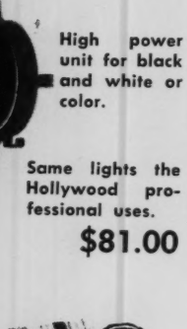

Insure a steady tripod support for your newsreel camera when atop a station wagon or car platform. Heavy bronze construction. Weatherproof. Set of three.

$28.00

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WHAT'S NEW

Continued From Page 458

a new lightweight version of their Pro-600 16mm sound-on-film camera. Designated the "Pro-600 Special," camera features all-transistorized magnetic sound recording unit; and a lightweight, high-torque synchronous sound drive motor designed especially for the camera. New camera is reduced 32% in weight yet retains all the sound-recording features of heavier Auricon studio cameras. Film capacity is 400 feet with Auricon's new lightweight magazine, which will also accommodate 100-ft. and 200-ft. daylight loading spools of 16mm film. Although camera features magnetic single-system sound recording, it may be had with optical recording unit or with double-system and optical sound.

Slate-and-Clapstick

For only $4.75, the film maker can purchase a professional-type camera slate with clapstick from The Camera Mart, Inc., 1845 Broadway, New York, N. Y. Slate is large professional size for sound productions and contains ample space for the essential information required for all sound film takes. Slate-like surface produces clear white markings when made with ordinary chalk.

★

Improved Pathe-16

Burke & James, Inc., 321 So. Wabash Ave., Chicago 4, Ill., national distributors of the French-made Pathe-16 "see-through" reflex finder camera, announces the camera is now available with such professional accessories as 200-ft. and 400-ft. magazines, electric motor, and tachometer. The Pathe-16 takes both standard double-perforated and single-perforated 16mm film, also all C-mount lenses.

Hi-Hat For Arriflex

Cinekad Engineering Co., 763 Tenth Ave., New York 19, N. Y., offers a sturdy, lightweight Hi-Hat designed especially for Arriflex 35mm cameras. It can be used on any tripod or mounted any place where use of tripod is impractical. List price is $34.00.

★

Fluid Tripod Head

New list price of the CECO Pro-Jr., Fluid Head is $300.00, according to announcement of Camera Equipment Company, Inc., 315 West 43rd Street, New York, N.Y. Head is designed to accommodate Auricon Cine-Voice, Arriflex 16mm and 35mm, 16mm Maurer, Cine Kodak Special, Bolex H-16, 16mm Filmo with electric motor, Eyemo, and Eclair Camerette. Salient features are positive locking levers for tilt and pan, allowance for both mechanical and viscous drag, twin-lever tilt system, built-in level, and two-place angular pan-handle.

Delay Timer

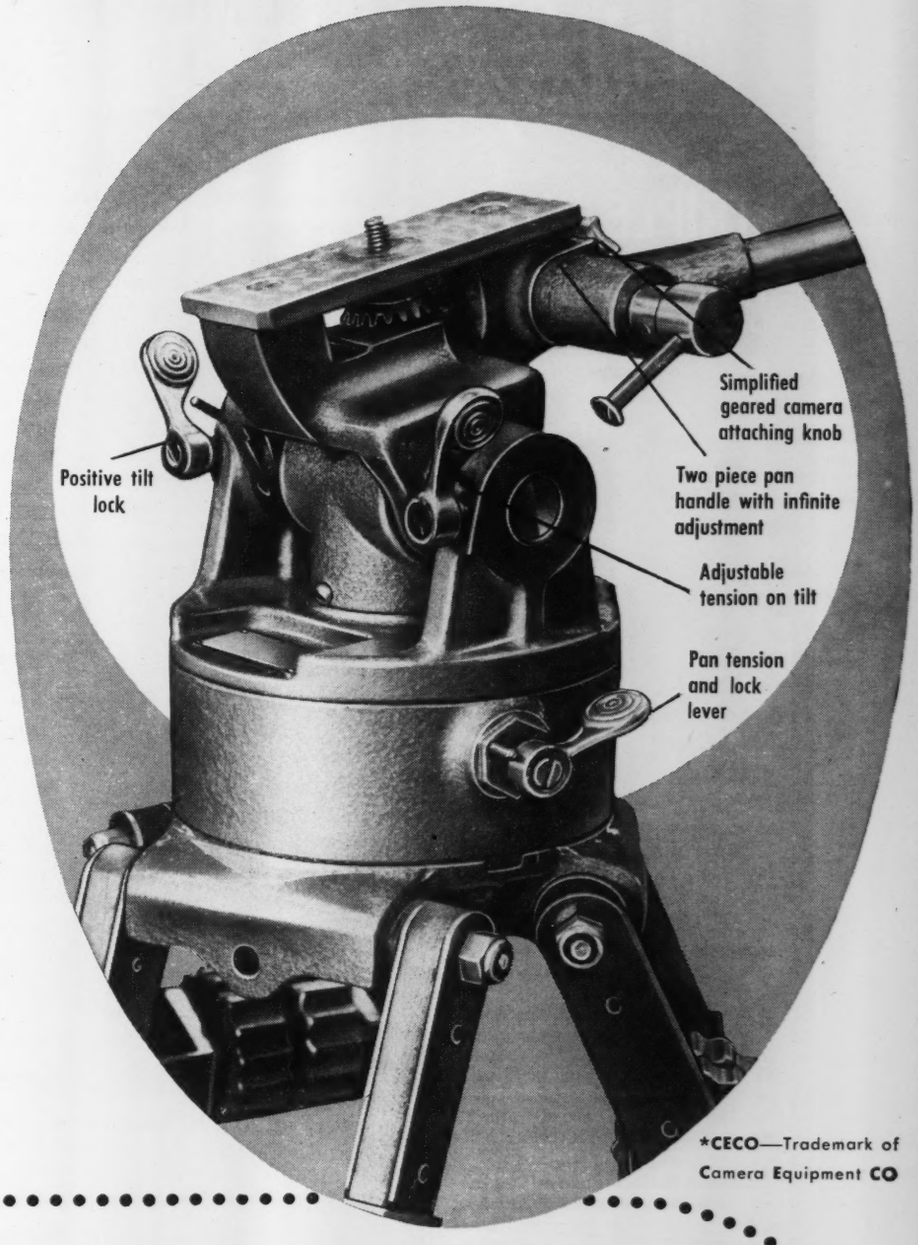
Lectronotch is tradename of a variable time delay unit designed for spacing differences in motion picture printing cue systems. Device delays impulse to the light-change mechanism until correct frame of film is in position. Price is $195. Distributor is SOS Cinema Supply Corp., New York 19, New York. ■

You'd know it blindfolded — that

CECO'S* NEW PRO JUNIOR FLUID HEAD

is the undisputed performance champ

It's smoother, more rugged, better engineered, guaranteed leak-proof and locks without "diving"


Positive tilt lock
Simplified geared camera attaching knob
Two piece pan handle with infinite adjustment
Adjustable tension on tilt
Pan tension and lock lever

Our engineers were not concerned with building a "popular" model at a price. Their objective — to design a Fluid Head that cameramen dream about.

CECO's new Pro Junior Fluid Head is the acknowledged master. Its *worth* is being proved every day — in studios and on location, in tropical climates and in the frozen North.

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1. Silicone Molecular fluid is in one *horizontal* chamber. A rotating disc keeps the fluid equally distributed on the internal bearing surface during both panning and tilt operations.
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3. Fits *all* Professional Junior Tripods (Baby, Hi-Hat or regular) *without* the use of special adapters.
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5. Two-place pan handle with infinite angle adjustment.
6. Guaranteed leak-proof. All shafts have double end "O" rings. The pan has an extra trap ring to prevent fluid, which might have escaped the large "O" ring, from leaking.
7. Pan and tilt tension control levers are *substantial* — not the itty-bitty screw gimmicks that fail when you breathe on them.
8. The only fluid head which is ideal for use with Arriflex 16mm & 35mm, Bell & Howell Eyemo *and* Filmo (with or without magazine and motor drives), Maurer 16mm, Auricon Cine-Voice and Conversion, Cine-Kodak Special and the Bolex Cameras.

Operating temperature range: 20° below zero to 120° F. Forward tilt: 90°. Backward tilt: 50°. Total weight: 8¼ lbs. Additional mechanical drag can be imposed on both pan & tilt by convenient lever locks. All shafts run on bronze bearings, and shoulder on hardened steel washers, eliminating freeze-ups.

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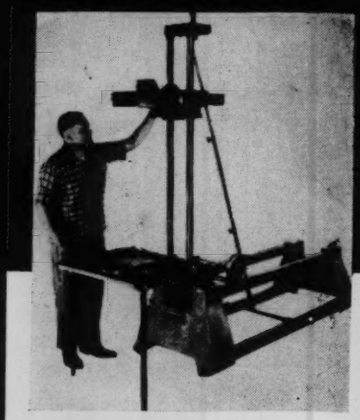

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TECHNICAL TRENDS

in cinematic techniques

Today's Gun Camera

Recently, the general concept of a gun camera was drastically changed when a 100-ft. magazine became available for the TN-9 camera. Since that time, many hundreds of these magazines have been used in aircraft and missile installations.

Now, Traid of Encino, California, has developed a 200-ft. magazine kit for use on the TN-9 gun camera, which also fits the KB-38 type camera. Built around the rugged Traid 620 displacement magazine, the kit includes mounting brackets, take-up motor, and a modified 50-ft. magazine that may be used in place of conventional 50-ft. or 100-ft. magazines.

★

Film Code Numbers

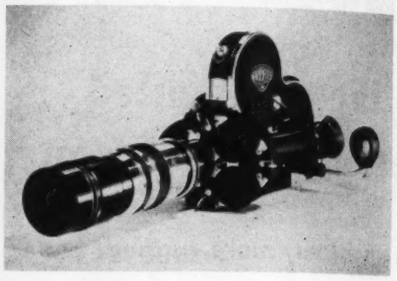
Not new but worth a reminder here is fact that each box of original film carries a code number. This usually consists of about nine or ten figures, as for example, "7255 204 05." Here the first four numerals identify the *type* of film. Ektachrome Commercial is 7255; Plus-X Reversal is 7267; Kodachrome Duplicating film is 5269, etc. The next three numbers identify the *emulsion batch* of that particular emulsion. In the case of Ektachrome Commercial, when these numbers are greater than 200, the film is identified as the "neutral" Ektachrome. Numbers up to 199 identify the "old" formula Ektachrome.

The last numbers in the series indicate the *roll number* of that particular emulsion batch. All the numbers are quite important to the film manufacturer—and to you, too, if something goes wrong. Through them it is possible to trace a bit of film history. That is why they are so necessary and helpful in reporting film defects to the manufacturer.—The Calvin *Aperture.*

★

Auxiliary Target Finder

In sports, wild life, industrial, military and missile motion picture photography, long focal length lenses are used to get large image sizes at long range. Since the field of view of such lenses is extremely small, it is often difficult to "find" small, fast-moving objects in the camera viewfinder.



PHOTOGRAPH shows tracking finder mounted on a late model Arriflex 16.

The Arriflex 16, because of its mirror reflex shutter, is considered one of the more ideal cameras for long range tracking. Now an Auxiliary Target Finder is announced by Arriflex Corp. of America, which enables Arri camera users to bring long focal length lenses on target quickly and easily.

The Albada optics of the finder are mounted and aligned, as shown in photo above. Design of the instrument is such that the camerman sees a bright, clear reticle projected in space out over a wide field. Center dot of the reticle is easily superimposed on the target or subject. Once instrument has been aligned, centering the target in the reticle of target finder automatically centers object in frame of the camera.

★

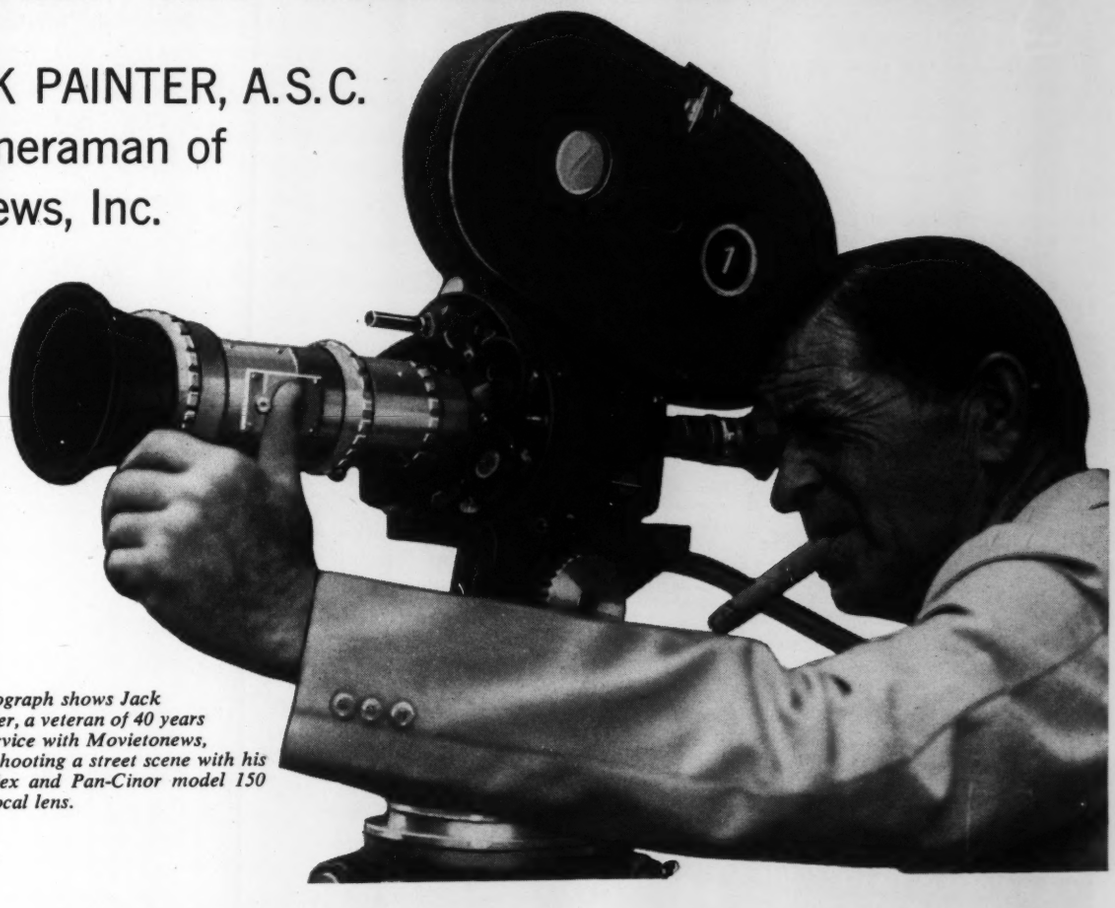
Electric Field Increases Film Speed

Strong electric fields applied during exposure of photographic materials can increase their speed and sensitivity, according to Jerome Rothstein, senior scientific executive at Edgerton-Germeshausen & Grier, Inc., Boston, Mass. According to Rothstein, a strong electric field—about 4-million volts per centimeter—applied to the photographic emulsion at the same time as a light pulse, dramatically increased both contrast and darkening in the developed film. ■

ARRIFLEX IS A NEWSMAN'S CAMERA

"What you see, you GET... with an ARRIFLEX® 35!"

says JACK PAINTER, A.S.C.
Chief Cameraman of
Movietonews, Inc.



Photograph shows Jack Painter, a veteran of 40 years of service with Movietonews, Inc. shooting a street scene with his Arriflex and Pan-Cinor model 150 varifocal lens.

In no uncertain terms, veteran Movietonews Chief Cameraman Jack Painter tells why he carries ARRIFLEX equipment **exclusively** on big, important news stories:

"One of the toughest assignments I've ever covered was President Eisenhower's jet trip to India in the fall of '59...

"We went with two Arriflex 35's... you can't beat *them!* We handled plenty of footage... 35,000 feet of color... no stalls, no repairs!

"Everything happens fast on a trip like that. The President jetted *nearly 24,000 miles in nineteen days!* We had to have our cameras run smooth and run a *lot*... and the Arriflexes sure did both.

"To get the best shots of Ike without a miss, sometimes I had to run ahead and swing myself up on the roof of a car or a truck... without letting go of the camera. The Arriflex is *light*... has beautiful *balance!*

"The best thing is the amount of time the Arriflex saved me. With that reflex finder... and it's plenty *bright*... I never had to worry about parallax, and I always knew where my focus was sharp...

"When you look through that finder... what you see, you GET! ...I got *great* pictures on that assignment!"

When a leading professional like Jack Painter chooses Arriflex, chances are strong that the Arriflex can serve you, too. **It is today's most popular portable professional motion picture camera.**

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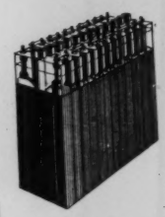

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Literature

BOOKLETS • CATALOGS • BROCHURES

16mm Film Terms

The "Winter-1960" issue of the Journal of the University Film Producers Association is a special issue on 16mm Film Terms—the work of the UFPA's Nomenclature Committee. Hundreds of commonly-used motion picture terms are included in the 34-page special issue, including definitions approved by the ASA, others compiled by the Academy of Motion Picture Arts and Sciences, and a fill-in of otherwise undefined terms by the Committee itself. Copies are $1.00 each and discounts are allowed on quantity orders. Order from University Film Producers Assn., Motion Picture Div., The Ohio State University, 1885 Neil Ave., Columbus 10, Ohio.

★

Color Film Services

General Film Laboratories offers a brochure on "Color Motion Picture Services," which illustrates and describes the machinery and methods utilized by that company in printing and processing 35mm and 16mm color film. Included is specific information and instructions on various methods of film preparation, General's 16-to-128 frame dissolves, and the handling of film. Copies are free to professional film makers. Write company at 106 West 14th St., Kansas City 5, Mo., or 1546 No. Argyle, Hollywood 28, Calif.

★

Mood Music Catalogue

Thomas J. Valentino, Inc., pioneer background and mood music library, offers its new 5th Edition Catalog. Listed are many new recordings for use in video-tape and film commercials, TV films, non-theatrical films, radio and newsreels. Provided are details and descriptions of each recording, including data on the timing, specific purpose of each cut, plus brief description of each theme, mood, or tempo. The library catalogued includes bridges, fanfares, openings, closings, tags and production numbers. All compositions are original and none are in public domain. Catalog copies are free. Write above company at 150 West 46th St., New York 36, N.Y.

★

Film Lab Brochure

Southwest Film Laboratory, Inc., 3024 Ft. Worth Ave., Dallas 11, Texas, offers, free, a copy of its new brochure describing company's varied laboratory services, price list, and containing 16mm motion picture production information. Make request for Booklet B-200 on your company letterhead.

★

Lamp Performance Chart

Natural Lighting Corp., 650 So. Flower, Burbank, Calif., offers, free, a Performance Chart for incandescent lamps used with ColorTran equipment and boosted in intensity with ColorTran Converters. Chart lists 14 of the most popular lamp types, with intensity and coverage provided at different distances at both 110-volts and 120-volts output. Chart also lists typical applications for each bulb type with recommended reflector or housing.

★

Filter Selector Chart

Available free from Entico Industries, Inc., 610 Kosciusko St., Brooklyn 21, New York, is a new Filter Selector Chart which contains data on filters such as general description, purpose, and effect for which they are designed, the decamired values of light-balancing filters, color temperature of light sources in Kelvin degrees, and their decamired values, etc. The change in latest exposure indexes of color films, when used in different light conditions with appropriate filter, is clearly shown.

★

Film Processing Brochure

"Film Processing Simplified" is title of comprehensive illustrated booklet offered by Canadian Applied Research Ltd., 1500 O'Connor Dr., Toronto 16, Canada, which explains function of company's new tri-film processor.

These 52 executives have an average of more than 25 years' experience in the film industry and have been with CFI Hollywood an average of over 16 years:

1) Ray Armstrong, 35mm Color Negative Developing Foreman; **2) Ray Biederman,** Negative Assembly Foreman; **3) Leo Bloomberg,** 16mm Developing Foreman; **4) Nate Bloomberg,** 16mm Printing Foreman; **5) Harry Buckler,** 35mm Color Positive Developing Foreman; **6) F. H. Carlin,** 35mm Positive Developing Foreman; **7) Reginald Carroll,** 35mm Densitometric Control Foreman; **8) Bob Casey,** 35mm Printing Foreman; **9) John Cooper,** Vault Department Foreman; **10) Frank Cootz,** Timer; **11) George Crane,** 35mm Customer Service Representative; **12) Jack Doyle,** Timer; **13) Kenneth Dunn,** 16mm Negative Assembly Foreman; **14) Ted Fogelman,** Laboratory Superintendent; **15) Bill Funck,** Title & Optical Production Supervisor; **16) Jack Goetz,** Sales Administrator; **17) Jack M. Goetz,** Public Relations Director; **18) Phil Gorth,** Timer; **19) Bob Grubel,** Chemical Lab Foreman; **20) Bob Gustofsen,** 16mm Service Coordinator; **21) Dane Hansen,** Chief Projectionist; **22) Dick Harrison,** 16mm Densitometric Control Foreman; **23) Carl Hauge,** Quality Control Engineer; **24) Ted Hirsch,** Vice President, Operations; **25) Ira Johnson,** Comptroller; **26) Tom Jones,** Maintenance Foreman; **27) Jim Lawler,** Office Manager; **28) Art Ludington,** 35mm Customer Service Supervisor; **29) Lew Mansfield;** 35mm Customer Service Representative; **30) Julius Mond,** 16mm Positive Assembly Foreman; **31) Frank Montfort,** Security Director & Military Liaison Officer; **32) Paul Morrill,** Timer; **33) Val Osborne,** Timer; **34) Russ Plappert,** Machine Shop Foreman; **35) Pat Powers,** 35mm Positive Assembly Foreman; **36) Lad Powolny,** 35mm Negative Developing Foreman; **37) Ed Reichard,** Chief Engineer, **38) Roger Richardson,** Color Control Supervisor; **39) Dick Rodgers,** Resident Counsel; **40) Bob Ross,** Kodachrome Negative Assembly Foreman; **41) Herschell Sanders,** Art Department Director; **42) Job Sanderson,** Equipment Maintenance Supervisor; **43) Ralph Shadduck,** Title & Optical Assembly Foreman; **44) Pete Silverman,** 35mm Customer Service Representative; **45) Mike Simon,** Credit Manager; **46) Henry Solow,** 16mm Production Control Supervisor; **47) Sid Solow,** Vice President and General Manager; **48) Morris Sparks,** Timer; **49) Tom Sproul,** 35mm Customer Service Representative; **50) Dale Tate,** Title & Optical Division Manager; **51) Jack Thomson,** Title & Insert Cameraman; **52) Meyer Weinstock,** Kodachrome Department Foreman.

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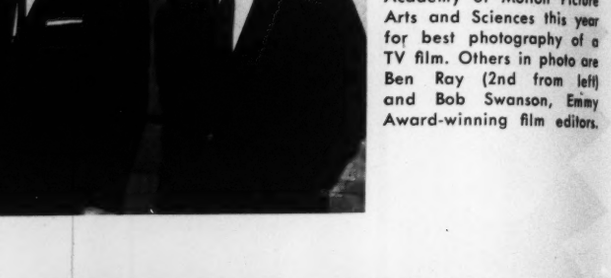
NEWS AND PICTURES OF THE ASC, ITS MEMBERS AND INDUSTRY PERSONALITIES

LEE GARMES, ASC President (left) welcomes Charles Straumer to the ASC's June dinner - meeting. Straumer won the Emmy Award of the Academy of Motion Picture Arts and Sciences this year for best photography of a TV film. Others in photo are Ben Ray (2nd from left) and Bob Swanson, Emmy Award-winning film editors.



JOHN WANER of the Hollywood office of Motion Picture Film Dept. of Eastman Kodak Co. conducted illustrated lecture on E-K's recently introduced high-speed color films at June meeting of American Society of Cinematographers.

Philip Lathrop recently - elected member of the ASC, last month was elected to the Board of Directors of the Los Angeles Chapter of the Academy of Television Arts and Sciences. Lathrop is one of the industry's busiest cameramen photographing films for TV.

★

Hollis W. Moyse, Sr., an Associate Member of the ASC for many years and associated with the Hollywood office of DuPont's Photo Products Division as a technical representative since 1929, died July 22 after a short illness. He had previously been with Technicolor from 1924 to 1928. His widow and two sons survive.

★

The ASC, in one of its first moves to publicize aims and functions of the American Society of Cinematographers and its members, participated in the 1960 Hollywood Film Festival and Photo Fair June 16 to 19 at the Los Angeles Shrine Auditorium. Assembled in exhibition area under the direction of Arthur Miller and Walter Strenge was display of old-time motion picture cameras and equipment, also photos of all Academy Award-winning members of the Society. ■

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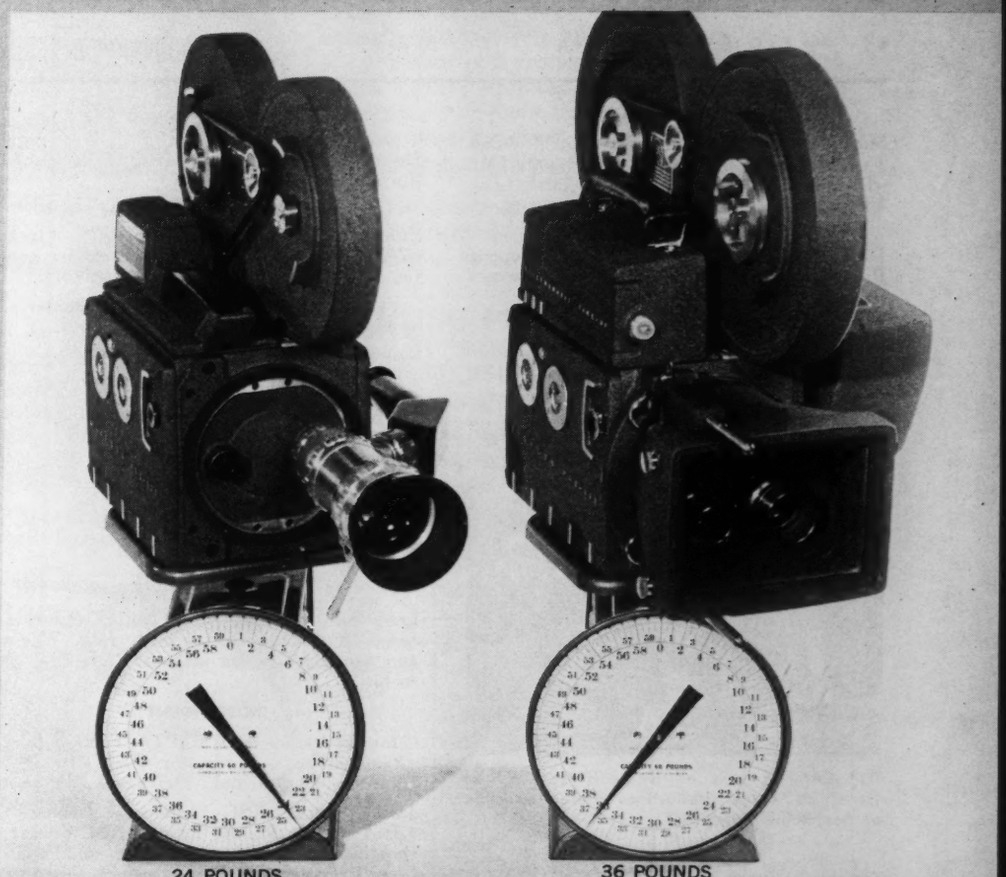

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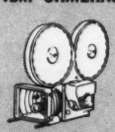

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PHOTOGRAPHIC ASSIGNMENTS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

By MARION HUTCHINS

AMERICAN NATIONAL

MONROE ASKINS, "Bat Masterson"* (Ziv-TV) with Gene Barry; "Lockup"* (Ziv-TV) with MacDonald Carey; commercials* (Ziv-TV).

CALIFORNIA STUDIOS

JACK MARQUETTE, "War Hero" (Burt Topper Prods.) with Tony Russell and Baynes Barron. Burt Topper, director.

CASCADE PICTURES

WILLIAM SKALL, ASC, Commercials*

ROY SEAWRIGHT, Commercials*

THE CAMERA rolls on a scene for "Wagon Train" at Revue Productions under direction of Benjamine Kline, ASC.

COLUMBIA STUDIOS

PHILIP TANNURA, ASC, "Two Faces West"* (Screen Gems) with Charles Bateman and June Blair. Don Gold, director.

BURNETT GUFFEY, ASC, "Cry for Happy" (William Goetz Prod.) with Glenn Ford and Donald O'Connor. George Marshall, director.

OSWALD MORRIS, "The Guns of Navarone" (Color; Highroad Prod.; shooting in Greece) with Gregory Peck and David Niven. Alexander Mackendrick, director.

JOE MACDONALD, ASC, "Pepe" (George Sidney Int'l-Posa Prods.; CinemaScope & Color) with Cantinflas, Dan Dailey and Shirley Jones. George Sidney, producer-director.

WILKIE COOPER, "Mysterious Island" (American Films Prods.; shooting in Spain) with Michael Craig and Joan Greenwood. Cyril Endfield, director.

CHARLES LAWTON, JR., ASC, "A Raisin in the Sun" (Shooting in Chicago) with Sidney Poitier and Claudia McNeil. Daniel Petrie, director.

GERT ANDERSEN, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed. Andrew McCullough, director.

HAL MOHR, ASC, "Underworld U.S.A." (Wide-Screen; Globe Enterprises) with Cliff Robertson and Dolores Dorn. Sam Fuller, producer-director.

DESILU STUDIOS—Culver City

CHARLES STRAUMER, "The Untouchables"* (Desilu Pods.) with Robert Stack and Jerry Paris.

DESILU STUDIOS—Culver City

ROBERT DE GRASSE, ASC, "Jack Benny Show"* (Desilu Prods.) with Jack Benny. Norman Abbott, director.

DESILU STUDIOS—Gower

KENNETH PEACH, ASC, "Lassie"* (Jack (Wrather Prods.) with June Lockhart and Jon Provost.

DESILU STUDIOS—Motion Picture Center

SID HICKOX, ASC, "Angel!"* (Desilu Prods.) Lamont Johnson, director.

WALT DISNEY STUDIOS

EDWARD COLMAN, ASC, "The Absent-Minded Professor" with Fred MacMurray and Nancy Olson. Robert Stevenson, director.

GENERAL SERVICE STUDIOS

FRANK REDMAN, ASC, "Perry Mason"* (CBS-TV) with Raymond Burr and Barbara Hale.

GOLDWYN STUDIOS

LEON SHAMROY, ASC, "Go North" (CinemaScope & DeLuxe color) with John Wayne and Stewart Granger. Henry Hathaway, director.

INDEPENDENT

CHARLES LANG, JR., ASC, "*The Facts of Life*" (Panama-Frank Prods. for UA) with Bob Hope and Lucille Ball. Mel Frank, director.

JAMES SEELEY, ASC, "Films for Defense"* (RCA Motion Picture Prods.; NBC release; shooting in Alaska, Greenland and U.S.) Lowell Shaffer and Esko Townell, directors.

LIONEL LINDON, ASC, "A Matter of Conviction" (Contemporary Prods. for UA; shooting in N.Y.) with Burt Lancaster and Dina Merrill. John Frankenheimer, director.

SAM LEAVITT, ASC, "Exodus" (Panavision & Color; Otto Preminger Prod.; U.A. release; shooting in Israel) with Paul Newman and Eva Marie Saint. Otto Preminger, director.

FRANK PLANER, ASC, "King of Kings" (Technicolor, Samuel Bronston Prods.; shooting in Spain) with Jeff Hunter and Robert Ryan. Nicholas Ray, director.

LOTHROP WORTH, ASC, "American Doctor"* (Roland Reed Prods.; color) with Donald Woods. Arthur Pearson, director.

JAN & JERRY PAUL, "Conservation for a Better Land" (Hurbert Budek Co., Bakersfield, Calif.)

JAN PAUL, Commercials*

AMERICO HOSS, "The Blonde from Buenos Aires" (color; Continental Films; shooting in Argentina) with Mamie Van Doren and Jean Pierre Aumont. George Cahan, director.

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of religious films (Color) Harold Schuster, director.

METRO-GOLDWYN-MAYER

HAROLD WELLMAN, ASC, "Atlantis, The Lost Continent" (MetroColor; George Pal Prods.) with David Mioni and Joyce Taylor. George Pal, director.

METRO-GOLDWYN-MAYER

KIT CARSON, "Brothers Brannagan"* with Steve Dunne and Mark Roberts.

JOHN NICHOLAUS, "Rawhide"* (CBS-TV) with Eric Fleming and Clint Eastwood.

DALE DEVERMAN, "One Step Beyond"* with John Newland.

WILLIAM MARGULIES, ASC, "Bachelor at Large"*

ROBERT BRONNER, ASC, "Where the Boys Are" (C'Scope & Color; Euterpe Prods.; shooting in Fla.) with Dolores Hart and George Hamilton. Henry Levin, director.

PARAMOUNT STUDIOS

WILLIAM SNYDER, ASC, HASKELL BOGGS, "Bonanza"* (NBC-TV) with Michael Landon and Dan Blocker.

LOYAL GRIGGS, ASC, "G.I. Blues" (Color; Hal Wallis Prod.) with Elvis Presley and Juliet Prowse. Norman Taurog, director.

JEAN BOURGOIN, "The Counterfeit Traitor" (Technicolor; Perlberg-Seaton Prod.; shooting in West Berlin) with William Holden and Lilli Palmer. George Seaton, director.

FRANK PHILLIPS, "Have Gun Will Travel"* with Warner Anderson and Tom Tully.

PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"* with James Arness and Dennis Weaver.

REPUBLIC STUDIOS

ERNEST LASZLO, ASC, "The Day of the Gun" (Brynaprod; shooting in Mexico) with Rock Hudson and Dorothy Malone. Robert Aldrich, director.

ROBERT KRASKER, "Romanoff and Juliet" (Color; Payor Prod.; shooting in Italy) with Peter Ustinov and Sandra Dee. Peter Ustinov, director.

CHRIS CHALLIS, "The Grass is Greener" (Grandon Prods.; shooting in England) with Cary Grant and Deborah Kerr. Stanley Donen, director.

ROBERT BURKS, ASC, "The Great Impostor" with Tony Curtis and Karl Malden. Robert Mulligan, director.

EMMETT BERGHOLZ, "Death Valley Days"* (Filmaster Prods.)

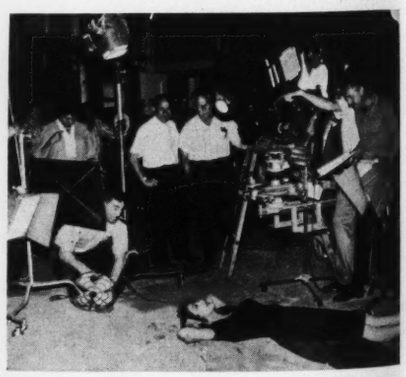
WILFRED CLINE, ASC, "Stagecoach West"* (Four Star Prods.) with Wayne Rogers and Richard Eyer.

GEORGE DISKANT, ASC, "The Rifleman"* (Four Star Prods.) with Chuck Connors and Johnny Crawford.

REVUE STUDIOS

ELLIS THACKERY, ASC, JOHN RUSSELL, ASC "The Thriller"* (Revue Prods.)

Continued On Page 506



LORETTA YOUNG lies on sand of indoor "beach" scene, while Director of Photography Norbert Brodine's camera crew readies camera for shot.

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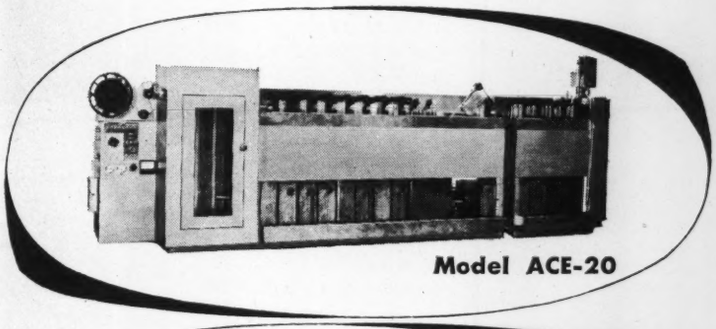

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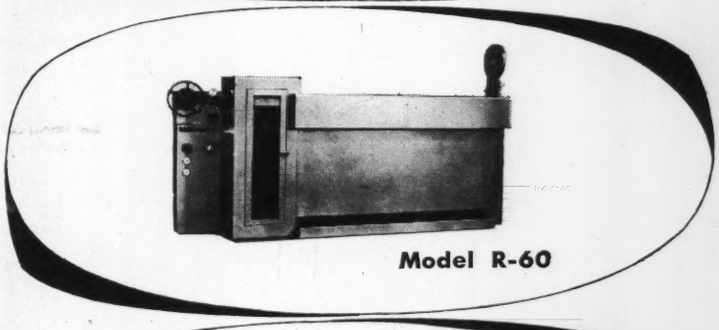

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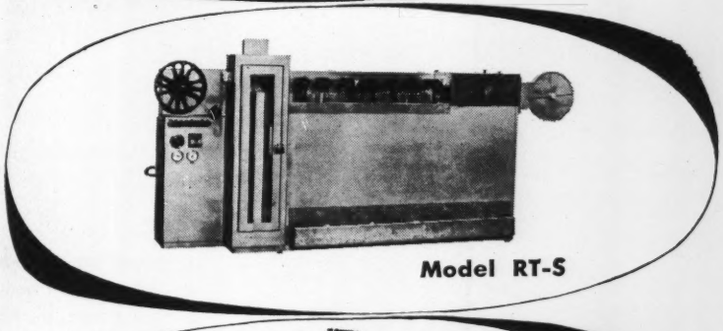

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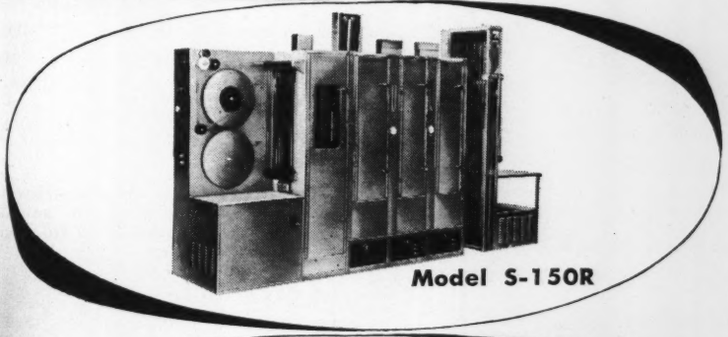

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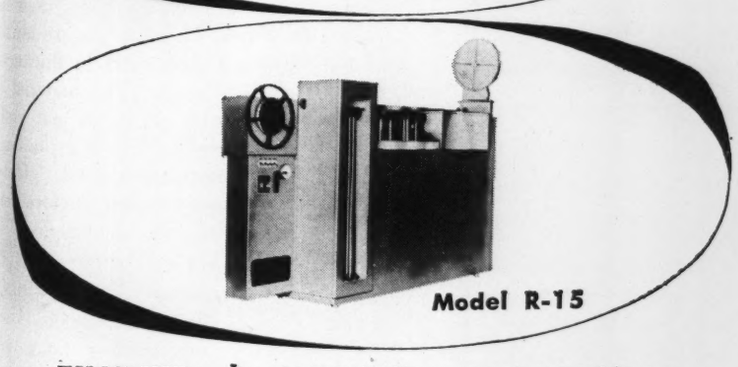

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416 D	Neg/Pos.	B&W	16mm	80 FPM
N	Neg/Pos.	Microfilm	16/35mm	8 FPM
L	Neg/Pos.	B&W	16/35mm	8 FPM
RN 16/35	Neg/Pos.	B&W	16/35mm	24 FPM
RN 16/35mm	Neg/Pos.	Microfilm	16/35mm	24 FPM
316D35	Neg/Pos.	B&W	16/35mm	32 FPM
316D35M	Neg/Pos.	Microfilm	16/35mm	32 FPM
416D35	Neg/Pos.	B&W	16/35mm	80 FPM
PN100	Neg/Pos.	B&W	16/35mm	100 FPM
S 150-R	Neg/Pos.	B&W	16/35mm	150 FPM
470 ND	Neg/Pos.	B&W	70mm	10 FPM
35ND70	Neg/Pos.	B&W	35/70mm	30 FPM
70R10	Reversal	B&W	70mm	10 FPM
R 15	Rev & Neg/Pos.	B&W	16mm	15 FPM
R15TC	Rev & Neg/Pos.	B&W	16mm	15 FPM
R40	Rev & Neg/Pos.	B&W	16mm	25 FPM
R40TC	Rev & Neg/Pos.	B&W	16mm	25 FPM
RT-S	Rev & Neg/Pos.	B&W	16mm	85-125 FPM
R-60	Rev & Neg/Pos.	B&W	16mm	30 FPM
R-17-35	Rev & Neg/Pos.	B&W	16/35mm	17 FPM
R-60S	Rev & Neg/Pos.	B&W	16mm	60 FPM
R-90	Rev & Neg/Pos.	B&W	16mm	90 FPM
CN-10	Eastman Neg Ektacolor	Color	46mm	12 FPM
CN35-10	Eastman Neg Ektacolor	Color	35/46mm	12 FPM
ENP-25	Eastman Neg	Color	16/35mm	25 FPM
ACE 20	Ansco/Ektachrome 7255 Ektachrome Eastman SO 260 SO 270	Color	16mm	22 FPM
ACE 40	Ansco	Color	16mm	36 FPM
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WALTER STRENGE'S

QUESTIONS & ANSWERS

Need advice on a picture making problem? Your questions are invited and will be answered by mail. Questions and answers considered of general interest will appear in this column each month.

Q Please give me some information regarding the French motion picture camera, Camerette, about which I have heard a great deal lately. I would particularly like information about the lenses used on the combination 16mm/35mm model.—*G.C.L.*

Answer: The combination 16mm/35mm Camerette differs from the 16mm and 35mm models in that converting the former from one size film to the other is simply a matter of inserting the aperture plate of the desired film size and then mounting the proper film magazine. The same lenses used on either the 35mm or 16mm Camerette can be used on the combination model. The reflex finder shows the correct frame size for both films.

Q Please give information on correct material to use for a screen for background projection. I have used a panel of frosted glass for this in making titles, but with poor success.—*A.M.*

Answer: Most background projection screens used by professionals are of Ethyl cellulose, a thermal plastic true resin material which is cast in a seamless matrix which in turn produces a seamless screen of large area. The diffusion and/or dispersion characteristics of the screen is determined by the type of material applied to the "finished" side of the screen (the side which faces the camera).

Q Why is it better to use a long focus lens with long extension tube when photographing wild life and nature subjects instead of a lens of short focal length plus a short extension tube, which would produce an image of equal size?—*G.L.*

Answer: The same degree of magnification can be obtained with lenses of shorter focal length but they do not provide the desired working distance between subject and camera. Because nature subjects in this type of filming often are located in holes or under foliage, ample working distance is an important factor in such filming.

Q How are scenes of live animals produced where the animal appears to be talking, and with the words matching the movements of the animal's lips?—*C.B.*

Answer: Such scenes are the result of a combination of trick photography plus animation synchronized to a prerecorded sound track. The procedure involves the selection of suitable animal action footage, which may or may not be altered to requirements by rearranging the frame sequence in printing to obtain the desired timing.

Sometimes, the natural action does not exactly suit the situation, and it is altered or modified in the printing step by skip-framing, holding frames (for repeated printing), running the film in reverse, or repeating.

After working out the details of such a procedure on a timing sheet, the animation artist then animates the necessary lip action on cels on a scale exactly matching the image of the animal in the live-action footage. When the animation cels are printed in combination with the live action, the result is the illusive action of the animal speaking. The synchronized sound track, of course, does its share in completing the illusion.

Q What are the specifications for acetate sheets used in animated cartoon work, and what is the source of supply?—*G.H.B.*

Answer: Clear acetate sheets used in animated cartoon production are usually supplied in panels .005 in thickness and 20" x 50" in size. The material is cut to smaller size sheets to suit individual requirements. Aspect ratio, type of animation equipment used, quality requirements and cost are factors that usually determine cel dimensions.

The average cel size is 10" x 12½". Eight such pieces can be cut without waste from the 20" x 50" sheets. After the necessary registration holes are punched, there remains a usable area

Continued On Page 472

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QUESTIONS & ANSWERS

Continued From Page 470

approximately 8½" x 11¼", sufficient for most professional work.

Acetate sheets may be purchased from the Celanese Corp., 290 Ferry St., Newark, N.J., or Eastman Kodak Co., Rochester, N.Y.

Q In the production of special effects, how are the "turn-over" effects—both vertical and horizontal, and also the "book turn" produced? I refer to the type of effect where the action continues in the scene as the "turn-over" effect is in progress.—*Q.Z.*

Answer: One method is as follows: The picture action is projected through a translucent screen, with the picture area approximately 5" x 7". Both the projector and the screen are supported by a unit so constructed that it can rotate on an axis centered on the screen. The camera is so positioned that it can photograph the projected picture in the position of the page to be turned. Both the projection and the photography are done by stop-motion —that is, one frame at a time. The projection screen used for this work must be of very fine grain material. Sometimes a panel of flash-opal glass has been used with good results.

Q How can I obtain the diffusion or soft-focus effect that characterized much of the motion picture photography a couple decades ago?—*J.R.B.*

Answer: During the thirties, much of this soft-focus effect was obtained through use of special filters made by Harrison & Harrison, Hollywood, who at one time was turning out diffusion filters in six grades ranging from "just a suggestion of diffusion" to one producing full fog effect.

Using filters of this type will aid you in achieving the soft-focus effects desired.

Q Please name source of data on aspect ratios, aperture dimension for all wide-screen systems.—*M.H.H.*

Answer: The forthcoming American Cinematographer Manual.

If you watched the Democratic Convention in Los Angeles on TV it is likely that you saw events which were lit and/or photographed by Birns & Sawyer rental equipment. Photograph above shows national TV cameras in hotel ballroom balcony. Film cameras on floor, focussed on election condidates. All lights were ColorTran-Cinekings, all rented from Birns & Sawyer.

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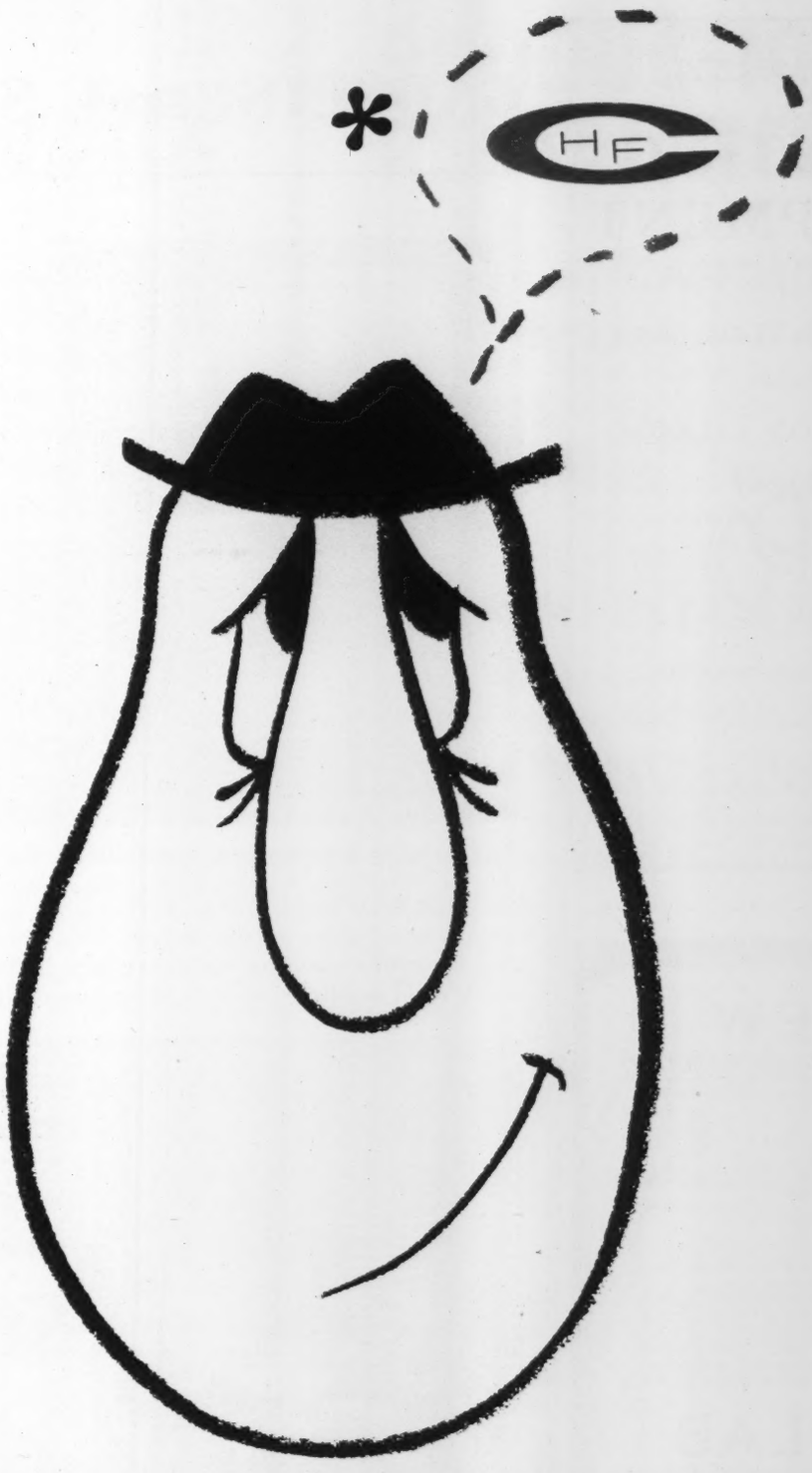

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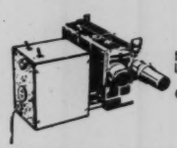

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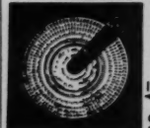

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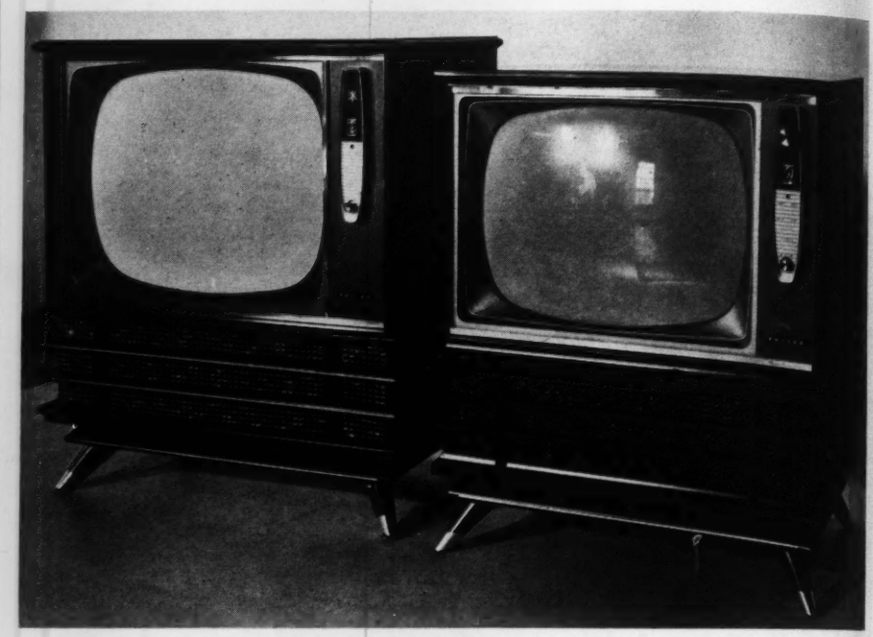

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FACED WITH excessive reverberation when camera crew attempted to film location sound footage in offices of John B. Stetson Co., Philadelphia, problem was solved by utilizing lengths of corrugated paper to absorb sound. As pictured above, lengths of single-faced corrugated paper cut from rolls was placed on edge around office, out of camera range, successfully cutting down reverberation and netting a satisfactory recording.—*Photo Arts Productions, Inc. Philadelphia.*

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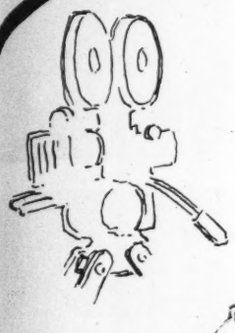

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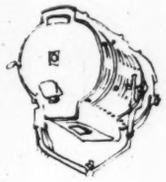

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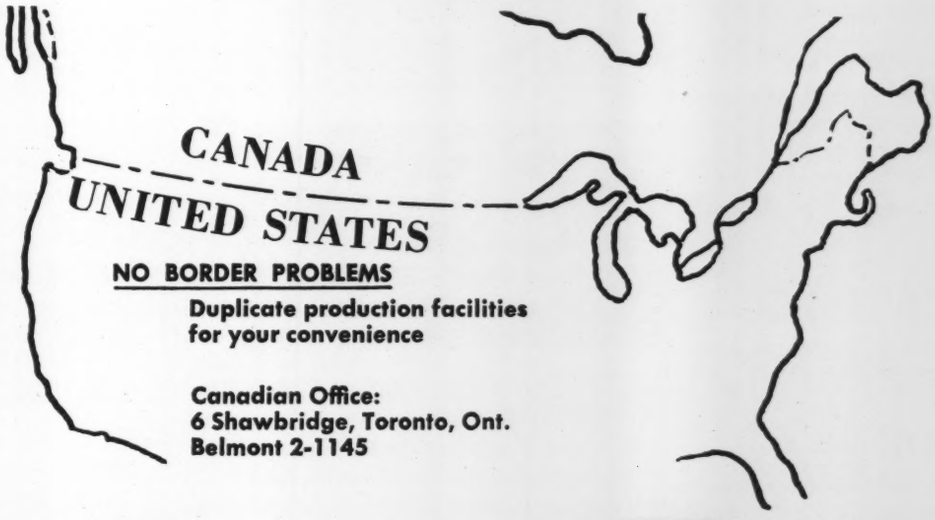

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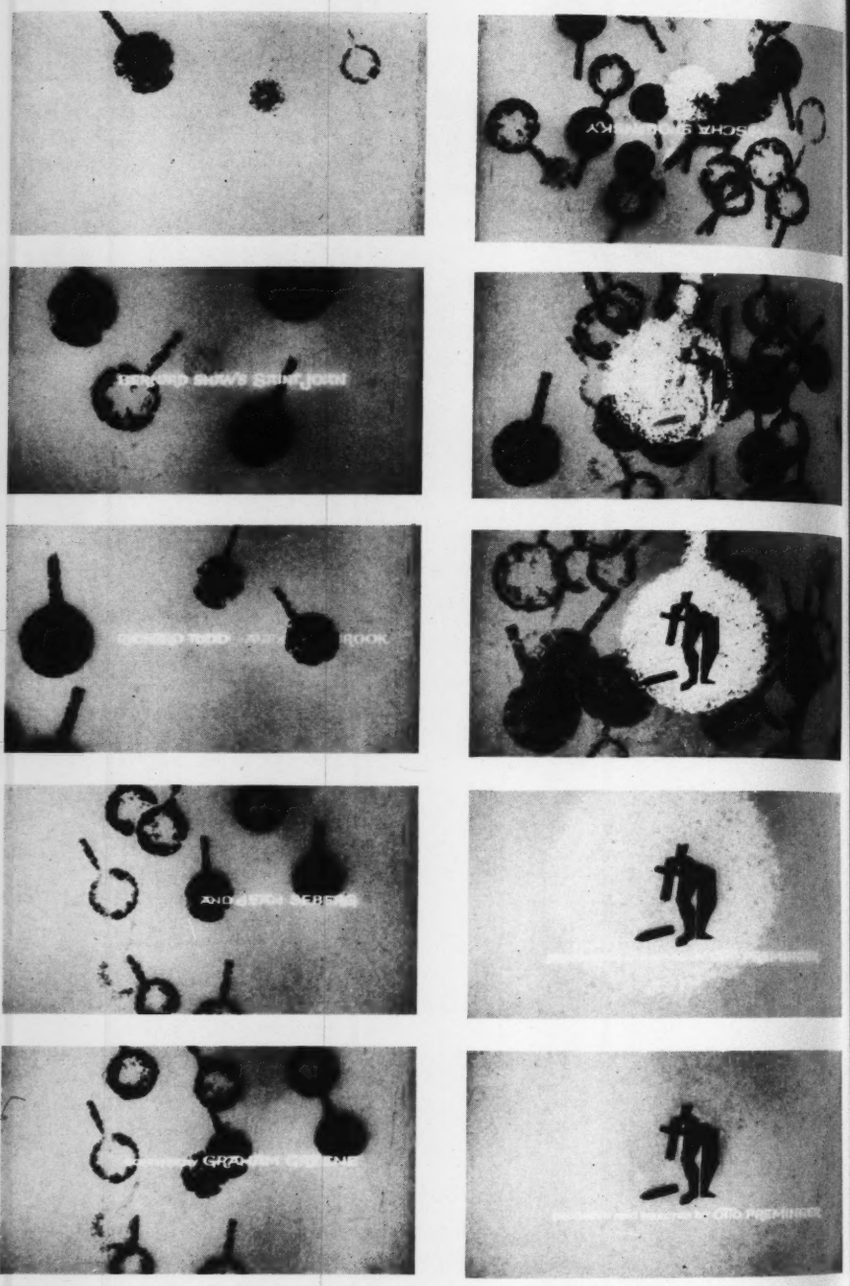
MODERN APPROACH TO FILM TITLING

By LOWELL A. BODGER



"SAINT JOAN"—In order to suggest a strong spiritual mood for this Otto Preminger production, Saul Bass designed a series of swinging bell clappers whose actions were closely coordinated with music in which the sound of pealing bells was dominant.

WITH THE CONTINUALLY increasing list of technical and administrative credits displayed at the opening of each motion picture made today, a marked trend has developed to make titles more interesting, and as a result, more useful in enhancing the plot of the film.

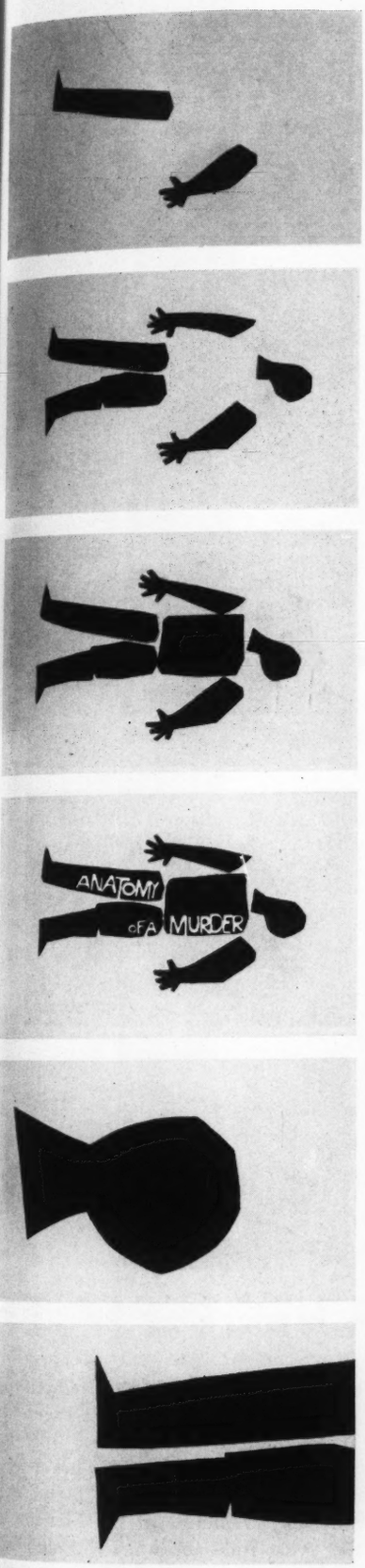
The content of titles at the beginning of a theatrical motion picture is regulated by a number of powerful guilds and accepted trade practices. The credits cannot be done away with. Though the main and credit titles of a film are usually the last things made, they are the first part of a picture which the viewer will see, and the producer is generally concerned with making the best possible impression on him at that time.

Titles Designed By Saul Bass

In coping with the audience's idea that during the screening of the titles is a time to make small talk, go for popcorn or change seats, a number of directors and artists have taken a new approach to titling their productions—1) let titles serve as a positive introduction to the story by setting an appropriate mood, or tempo; 2) make them interesting; and 3) make them easily readable.

Outstanding in the field of title design is Saul Bass. A versatile and highly imaginative graphic artist, he has executed titles and trailers for a number of successful motion pictures. In his work, Bass stresses an approach with the objective of making titles sufficiently provocative and entertaining to compel theatre audiences to pay attention, and to realize that something important is happening on the screen.

In the Michael Todd production, *Around the World in Eighty Days*, the story proper ends with one of the characters saying: "This is the end!" There is a brief fade-out, and then the first of a number of unique and beautiful animated scenes which comprise the titles of the film. The titles were handled in such a manner as to represent a condensed recapitulation of the preceding three hours of film. The various incidents, locations and characters in the story are portrayed in a six-minute epilogue through the use of caricatures and stylized drawings of the 19th century. Interesting movements of vividly colored backgrounds and pen-and-ink drawings of the dozens of characters appearing in the film aid in overcom-



"ANATOMY OF A MURDER"—The development and breakdown of the fragmented figure "trade-mark" of "Anatomy of A Murder" served as a background for the film's titles. Changes in the figure's position were closely timed to a jazz score by Duke Ellington.

ing the lack of desire to watch a great many titles after having viewed the preceding several hours of film. Anyone who has seen the picture will agree that the result was quite impressive.

In *Around the World in Eighty Days*, Saul Bass presented a classic in title design. He had at his disposal a vast subject matter, the use of color film, and the benefit of the 70mm Todd-AO process to add to the feeling of his work when displayed to the theatre audience. It is true that the cost of such an elaborate series of titles is so high as to discourage all but the most ambitious of producers. However, it is by all means possible to gain the same degree of audience rapport through a far less expensive treatment and even with black-and-and-white film.

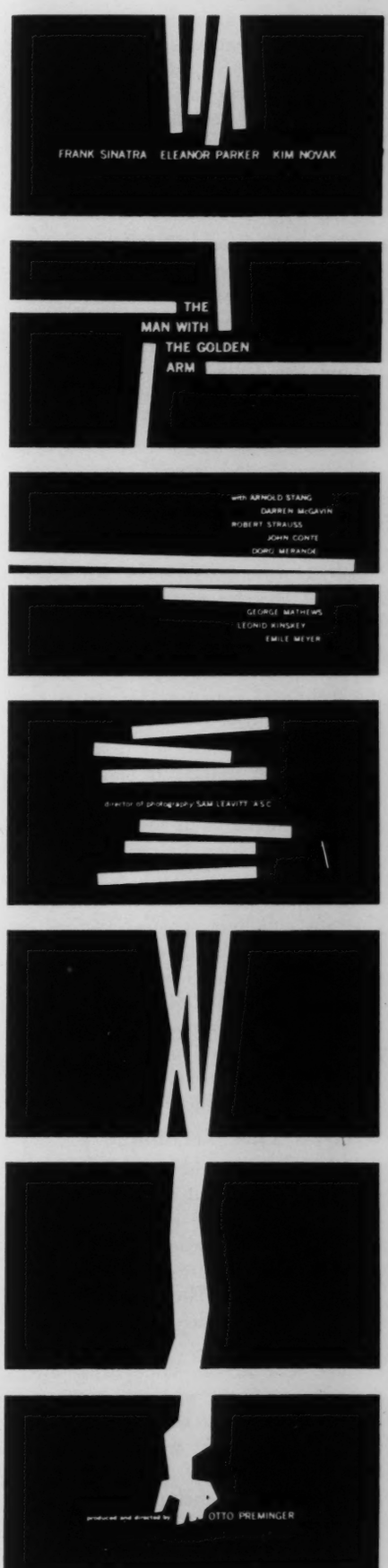
Bell Symbolizes St. Joan Titles

Otto Preminger's screen version of *Saint Joan* opens with bell symbols in the form of crudely animated clappers swinging across the screen. As they advance toward the viewer and enlarge to screen-filling size they fade out to reveal new clappers in the background. These too advance and fade out. As the titles continue the number of bells increases until among them a white clapper appears, advances, and dominates the entire screen. At the apex of its swinging motion a figure holding a broken sword materializes within it and the final credit appears. The music accompanying the titles contains a strong bell-sound motif which is timed to the action of the bell clappers and the appearance of the credits.

In this case, Bass sought to create a strong dramatic atmosphere with spirit-like overtones. While the artwork is not elaborate, nor detailed, it is highly appropriate and forceful.

For *Man With the Golden Arm* and *Anatomy of a Murder*, also Preminger pictures, highly rhythmic jazz themes are played against simple, but meaningful, black-and-white designs which serve to reflect the emotional qualities of the films. For *Man With the Golden Arm* a group of white bars is seen rapidly changing position against a black background as various groups of credits appear. The bars finally animate into the "arm" symbol and the final credit is flashed on the screen. In *Anatomy of a Murder* a fragmented figure is developed in close coordination with the music and an abstract handling of the various body elements then

Continued On Next Page



"MAN WITH A GOLDEN ARM"—Series of rapidly-moving white bars were used to convey the intense emotional qualities of this film in the opening titles.

follows.

So we see that music is an integral part of an effective title. There may be a composite of the various themes heard in the picture, as with *Around the World in Eighty Days*, or a taut and staccatoed jazz score to promote certain dramatic effects, as in *Man With the Golden Arm*.

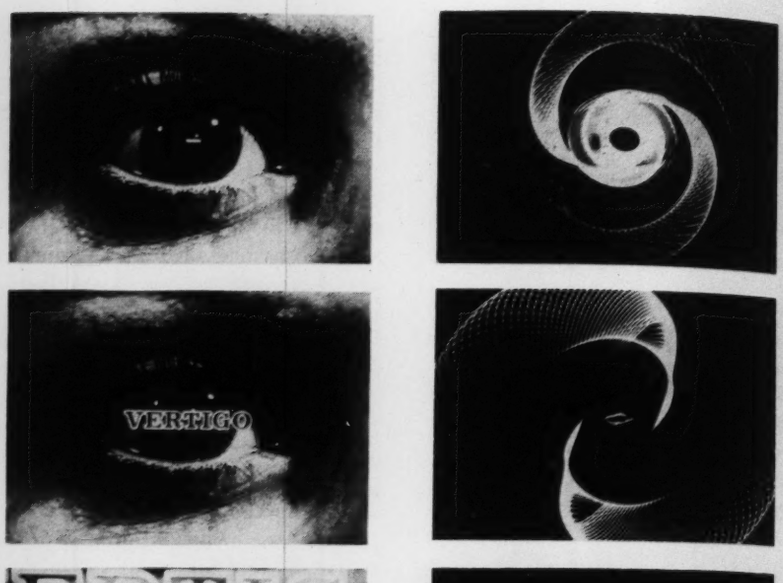
Alfred Hitchcock's *Vertigo* is a psychological thriller which demanded a skillful combination of unusual visual effects, color, and a pulsating musical tempo. Bass solved the problem by having the titles open in black-and-white, and panning slowly over closeups of a woman's face. Several credits zoom in and out of the camera field at this time. As the camera comes to rest on a shot of the eye the title of the film emerges from the center and zooms forward out of the frame. The screen is suffused with red as the first of a series of abstract forms emerges from the pupil and enlarges out of the film area. With the remainder of the credits appearing over these spiraling designs the feeling of dizziness, known as vertigo, is suggested.

The examples thus far described all contain either animation of some kind or an unusual optical effect. There are still other methods of providing a film with excellent titles which require little or no artwork. William Wyler's *The Big Country* opens with a montage of closeups and long shots of various aspects of a coach traveling across the plains. The sequence is in a brownish tint rather than full color and the credits are superimposed in white. Displayed in conjunction with a thrilling western musical score, the desired feeling of speed is achieved.

Delayed Title Technique

Delayed appearance of titles, or having them spread out over the first few minutes of a film is another technique practiced in dramatic productions, as in the recent Andrew L. Stone film, *The Last Voyage*. However, the usefulness of this practice is limited, as it may tend to lessen the effect of the credits, and at the same draw attention away from whatever action is taking place on the screen.

Hollywood might well take a lesson from the small T-V producers whose openings seldom include credits titles, but which are designed to capture the viewer's interest in the first half-minute of the program. This season Spartan Productions' *Peter Gunn*, and *Mr. Lucky* featured catchy, animated introductions, each including a playful handling of the symbol of that show. Other noteworthy main titles include those of *Twilight Zone*, by U.P.A., and *Small World*, by Saul Bass.



"VERTIGO"—Unusual spiraling forms emerged from the pupil of an eye to create a sense of dizziness in the titles for Alfred Hitchcock's "Vertigo." The screen was intermittently suffused with red and other colors.

In addition to developing the character of the immediate presentation, a form or design appearing in a set of titles can serve as a trademark for the film, for use in advertising and publicity.

Certainly there must be no assumption on the part of the producer that his production is merely an excuse for an attractive, eye-catching title, but rather that his production does *deserve* a suitable title which will fit the style and subject matter of the film and at the same time introduce his audience to the mood prevailing throughout the ensuing story. There will surely come a time when the simple credit lettered against a drab or lifeless background will be as much a thing of the past as a silent movie. ■

Color Correction In Lenses

Colors, being of different wavelengths of light, normally come to focus at different distances behind a lens. Such aberrations are modified or fully-corrected in modern photographic lenses, greatly improving their efficiency.

WHEN PASSING THROUGH a lens, white light is broken up into the prismatic colors of which it is composed, and these colors being of different wavelengths of light, come to focus at different distances behind the lens. The more actinic rays, to which the photographic emulsion is principally sensitive, form images which are not coincident with the images of greater visual brightness seen by the eye on the groundglass. This is called chromatic aberration. By combining in a lens optical glasses of the right refractive indicies, and grinding suitable curves, the planes of sharp focus of at least two of the primary colors are made coincident. For all ordinary purposes it is necessary to correct for only two colors if the others are brought very close to the common focus.[1]

Color correction in lenses is not a new wrinkle introduced as a consequence of the popular use of color film. Lens designers have been laboring over color corrections since the first lenses were assembled into optical systems.

As explained by Bausch & Lomb Optical Company, a color-corrected lens, in the language of the designer, is one satisfying two rather stringent specifications, and no lens failing to fulfill these two requirements can fairly be called "color-corrected."

Historically, unwanted color in images was recognized very early, and constituted one of the first challenges to the lens designer's skill. Research aimed at discovering the whys and wherefores of this annoying color led to a better understanding of lenses in general, and to new glasses, and even today this research continues.

The state of the color-corrections in a lens system is fundamental in the performance of the system and constitutes one of the first considerations in design. The subject is rather complicated, as there are in reality two distinct color aberrations the designer must eliminate before he is entitled to say that his system is color-corrected.

But before we undertake to amplify this statement, we must refresh our memories with a few facts of how light behaves.

In an eariler article in American Cinematographer, Allen E. Murray of Bausch & Lomb's Scientific Bureau explained that light travels in a vacuum at the astounding rate of 186,000 miles per second: that is, all light is conjectured to do so—blue, yellow, red, infra-red, etc.—it all skips merrily along at this dizzy rate in empty space.

"But something happens to this light," Murray said, "when it reaches a region filled with a more tangible substance. It is exactly the same thing that occurs when a train hits a snow bank, or a football player enters a broken field: a reduction of speed. At the boundary of the optically denser medium, the light beam is bent, or refracted, if the angle at which the beam hits the denser medium is other than 90°."

Continuing, Murray explained that a beam of light, on entering a medium in which the speed is less, is bent toward the normal—an imaginary line perpendicular to the surface —and that the reverse is true on leaving, as illustrated in Fig. 2.

The crux of the color effects is that in spite of the fact that all colors are transmitted through empty space with the same velocity, they insist upon being treated differently when traveling through ponderable matter. In glass, for instance, red light will travel about 3,000 miles per second *faster* than blue light. The speed differential has as its consequence the greater bending of the blue light over red light, causing the dispersion shown in Fig. 3.

In the design and manufacture of photographic objectives, several different types of glass are used whose basic action is illustrated in Fig. 3. One type is of low index of refraction, *i.e.*, it retards light little in passage.

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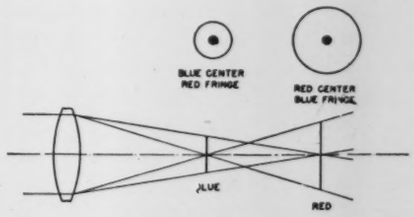


FIG. 1—Since refractivity of glass is greater for blue than for red, blue light will focus at a point near the lens than will red.

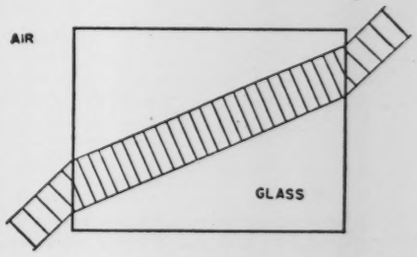
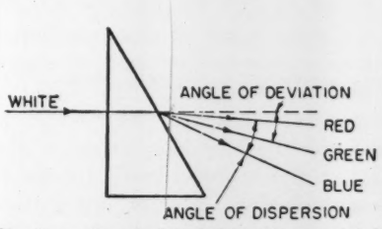
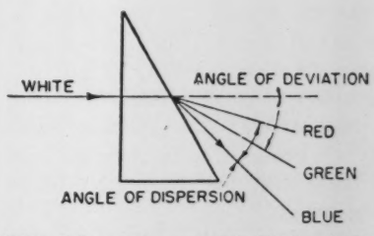


FIG. 2—How a beam of light is bent or refracted as it enters and leaves a denser medium.



Showing action of white light entering material of low refractive index.



White light entering material of high refractive index, at the same angle.

FIG. 3—Comparison of the dispersions of red and blue light.

This glass, in general, will retard blue only slightly more than the red.

At the other extreme are the glasses of high index, in which the velocity of light is lower, and this in turn means a greater angle of deviation whereby the blue is affected much more than the red, so the angular disperson is greater.

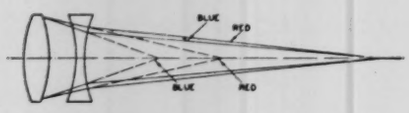


FIG. 4—How two lenses are combined to bring light of any two colors to a common focus.

Sir Isaac Newton, who founded much of optics as we now know it, from his extensive experience with the glass prisms of his day, concluded erroneously, that dispersion is always proportional to the deviation and that, as a consequence, achromatic combinations are impossible. Sir Isaac committed one of his rare mistakes in concluding that achromats are impossible and that the reflecting telescope is the best answer to the color problem.

Not long after Newton's death, the first acromats were made in England by combining a positive crown and negative flint lens to produce the basic type of achromatic doublet.

We have seen in Fig. 3 that a ray of light, upon passage through a prism, is bent, or deviated, in the direction

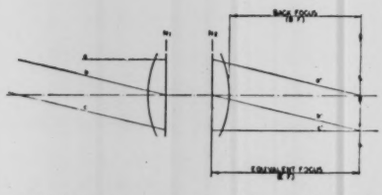


FIG. 5—Cardinal points can be looked on as points on the lens axis at which the refractive powers of the lens system are concentrated.

of the base. This is essentially the fundamental reason for the action of lenses of all kinds. The curved surfaces act like an assembly of an infinite number of small prisms, deviating each ray striking the surfaces sufficiently to bring it to a reunion, real or virtual, with the other rays forming the image.

A positive lens will *converge* parallel rays to a real focus; while a negative lens will *diverge* parallel rays, making them act as if they came from a point, the virtual focus.

From what was said previously concerning dispersion, it is apparent that *any simple lens cannot have one definite, fixed focal point for all light.* Since the light-bending power, or refractivity, of glass is greater for blue than for the red, the blue light will focus at a point nearer the lens than the red. This situation is illustrated in Fig. 1. This is the simplest and most readily-grasped example of chromatic aberration, and the type usually first corrected.

In practice, this longitudinal chromatic aberration will mean that there is no one focal point on the axis but several, depending on the color of the light used. A photograph made with a simple positive lens would show a large shift from visual focus to photographic, even with panchromatic negative material. The "chemi-

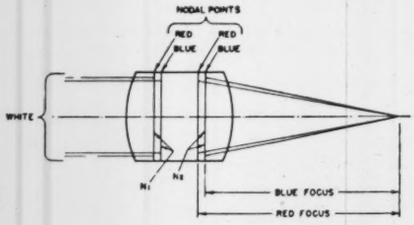


FIG. 6—Where red and blue colors unite in one focal point on the axis, and nodal points in the two colors are different, automatically the lens must have different focal lengths in the two colors.

cal focus" of the old-time photographers was of this nature.

It is said that a "perfect" lens cannot be made, and even in the best lenses, there remains a very small residual of this aberration, so that when a color-blind emulsion responding only to the blue is used, a shift towards the lens is usually necessary—the so-called "chemical focus." This effect is familiar also to those who have used infra-red sensitive emulsions in their cameras: for best results, it is usually necessary to rack the lens *out* a trifle.

A further result of this irresolution of focal points is the situation shown in Fig. 1, where at the blue focus the red rays create a red disc, and at the red focus the blue rays create a blue halo. A point object could hardly be photographed as a point under these conditions.

This axial chromatism is not difficult to correct and, as noted before, is given high priority. The secret lies in the relation of dispersion to deviation. Consider for a moment a simple positive lens as shown in Fig. 1. The marginal rays have been deviated toward a focus, and at the same time because of the dispersion of the glass, the red and blue rays are aimed at different points on the axis.

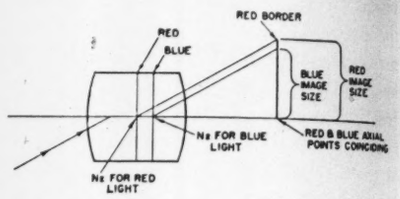


FIG. 7—Example of chromatic differences of magnification, or lateral color.

Now, everything would be perfect if there existed an optical material with a given amount of dispersion and no refractive power, for then correction could be effected with a plane parallel sheet of this wonderful material. Actually, the only practical material for this task is a glass which has a fortuitous relationship of refractivity to dispersion such that the dispersion will effectively cancel that of the positive lens while the refractivity is insufficient to cancel completely the convergence of the positive lens.

The lens component effecting this achromatism is negative, as shown in Fig. 4, and must have higher refractivity and dispersion than its positive mate.

This combination, then, will bring light of any two colors to a common focus on the axis. The other colors will focus at points practically identical with the chosen colors. Thus this lens would give a color-free star image on the axis.

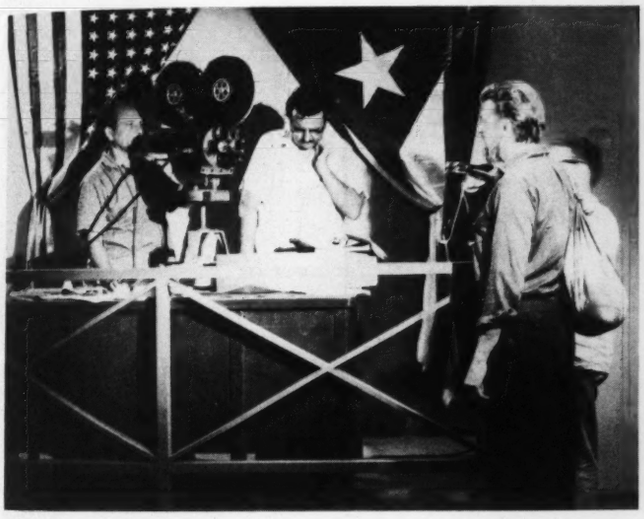
The other type of chromatic aberration is a bit more difficult to understand. It is somewhat more complicated both to explain and to show in a drawing. Some readers may recall the terms "cardinal points," "ideal planes," etc., which have appeared in literature on optics and photography. These points and planes are convenient ways of describing the properties of lens systems and are indispensable to the lens designer.

Briefly, these cardinal points can be looked on as points on the lens axis at which the refractive powers of the lenses or lens system are concentrated.

Continued On Page 495

CROUCHING BEHIND low-mounted Wall camera, Director of Photography Rafael Dones lines up shot for "Barefoot," Puerto Rican film, while make-up girl touches up actors' makeup.

ASSISTANT shades camera with umbrella while Dones makes last-minute exposure check with an incident light meter prior to shooting scene for "Barefoot," all-Puerto Rican film production.



DONES readies the Wall camera while Director Luis Alberto Negro studies script. Scene is a local police station—one of a few interiors in the picture.

CASUALNESS of natives watching movies being made is in direct contrast with similar scenes in U.S. Even cast and crew are relaxed, despite which picture was brought in under budget and schedule.

PHOTOGRAPHING MY FIRST FEATURE FILM

By RAFAEL DONES

AMONG *the pleasurable rewards that come to AC's Editors are the letters expressing sincere gratification for the inspiration and education gained through reading American Cinematographer.*

Rafael Dones, of Puerto Rico, a longtime reader, not only wrote such a letter but accompanied it with an article and photos describing his experience in directing the photography of his first feature-length motion picture for theatre release in his homeland.

"I can honestly say," Dones wrote, "that reading American Cinematographer enabled me to 'grow up' professionally as a cameraman."

His interesting article—a real success story—follows.—EDITOR.

IN THIS NEW era of "Operation Bootstrap," as the Government of the Commonwealth of Peurto Rico calls the present industrial development of this country, Puerto Rico's film industry is also growing up. At the present time, five local companies are turning out feature-length films.

The making of motion pictures in Puerto Rico was not considered an important industry until 1950, when the Government approved the establishment of a Cinema Department as an adjunct to the Department of Education. Here students of cinematography received substantial and comprehensive professional instruction in cinematog-

Continued On Page 503

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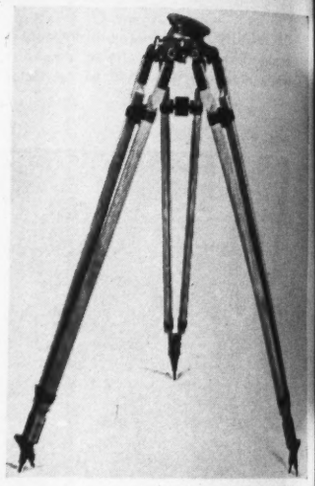

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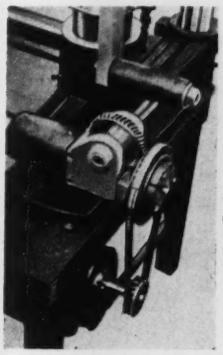

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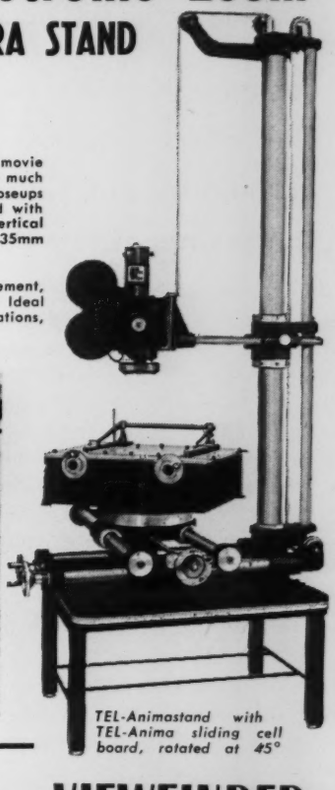

TEL-Animastand with TEL-Anima sliding cell board, rotated at 45°

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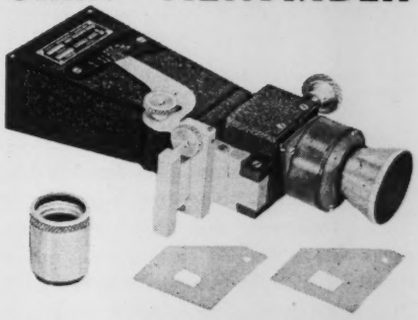

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New Double-X Pan Twice As Fast As Plus-X

Eastman Kodak's new Double-X Panchromatic Negative Film offers cinematographers a faster negative with lower granularity and having same ability as Plus-X to produce sharp images.

By VAUGHN SHANER

Chief Engineer, Motion Picture Dept., Eastman Kodak Company, Hollywood, Calif.

A RECENTLY-INTRODUCED film, representing the best compromise to date between the characteristics of high emulsion speed and low granularity, is gaining wide acceptance in television film applications.

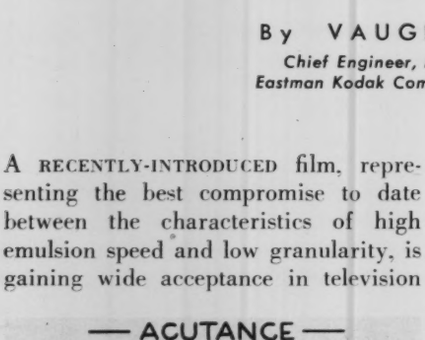


FIG. 1—Acutance (Sharpness-of-image) curves for Eastman Double-X and Tri-X negative films.

The new emulsion, Eastman Double-X Panchromatic Negative Film, Types 5222 (35mm) and 7222 (16mm), gives more than twice the speed of Eastman Panchromatic Negative Film Plus-X without significant increase in granularity, thus minimizing the subjective aspect of graininess in the projected image.

In addition, the new material provides major improvements over previous materials of comparable speed in two major respects: greater image sharpness; and shorter development.

It promises a general purpose use of high-speed film in a number of situations. For shooting indoor scenes, and outdoor sequences at low light levels, it will probably become the standard material.

To cinematographers, it means one of three courses can be followed:

(1) The lens can be stopped down by 1½ lens stops to provide greater depth of field, (as compared with a standard production material such as Eastman Plus-X negative film.)

(2) The light level can be cut to effect a saving in operating costs and to keep the set cooler for the greater comfort of actors and other personnel, and

(3) A compromise between the two.

The factor of set lighting is of great importance in television filming. TV films are made under tight budgets and tight shooting schedules. The new Eastman Double-X has achieved growing acceptance in TV work because of its demonstrated value in helping to keep costs in line by: (1) reducing setup time, and (2) cutting overall light requirements.

The increased speed of Eastman Double-X film permits the photographing of subjects previously considered

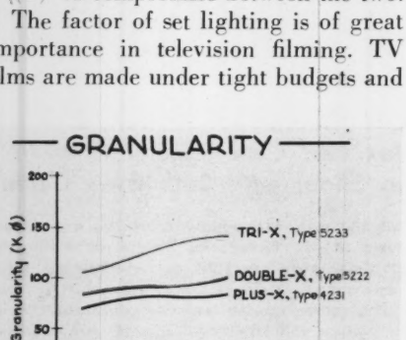


FIG. 2—Chart shows granularity compared with density for Plus-X, Double-X and Tri-X films.

FILTER FACTORS for SUNLIGHT ILLUMINATION

	KODAK WRATTEN FILTER		
	NO.8 (K2)	NO.15 (G)	NO.25 (A)
PLUS-X, Type 4231	2.0	2.5	8
DOUBLE-X, Type 5222	1.5	3	8
TRI-X, Type 5233	2.0	3	8

FIG. 3—Filter Factors that apply when using E-K Wratten filters with Plus-X, Double-X and Tri-X negative films.

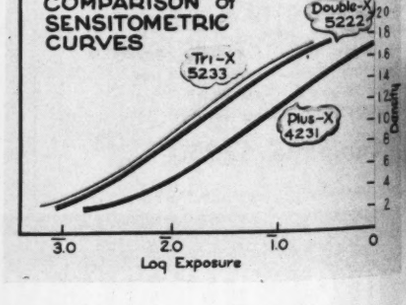
to be inadequately lighted for proper exposure. On cloudy days, early in the morning, or late afternoon, the low light levels then prevailing often present a problem when photographing with Eastman Plus-X film. With the use of Eastman Double-X negative as an auxiliary film, production can go ahead with the assurance of securing high-quality footage.

In instances where extremely high speed is not required, and where natural light is abundant, Eastman Plus-X negative film will continue to be used as a general production material for high quality results. It is possible that Eastman Tri-X negative film will find commercial usefulness in some marginal lighting situations, such as the scene of Tom Sawyer and Huck Finn sneaking up on Injun Joe in the dark cave by candlelight, in the recently-released Mark Twain classic.

Eastman Plus-X film represents one of the landmarks in the quest to provide more speed with lower granularity. It represents an excellent balance between the maximum desirable speed for cost purposes and the finest grain possible at that speed. When Tri-X film came on the scene, cinematographers were able to complement Plus-X film with the faster material for situations where speed was more important than granularity.

Double-X film represents a new tool for the cinematographer in this long

FIG. 4—Comparison of sensitometric curves for Double-X, Tri-X and Plus-X negative films.



quest for the ideal shooting medium. Overexposure is sometimes called for in order to heighten effectiveness of a scene. The consequences of overexposure while using Double-X film are not as severe as with Tri-X. This is because granularity does not increase as rapidly with exposure as is the case with Eastman Tri-X film.

In addition, tests show that Double-X has the same ability as Plus-X film to produce sharp images. Combining this fine grain with a speed only about 10 per cent less than that of Tri-X film results in a high-speed negative film of exceptional quality.

The exposure indexes recommended for Eastman Double-X negative film are ASA Daylight 250 and Tungsten 200. The color sensitivity of the new film is very similar to that of Plus-X and Tri-X. Specific filter recommendations, if required, can be obtained from Eastman technical representatives.

An important feature of Eastman Double-X film is its complete compatibility with the existing processing practices of Plus-X and Tri-X film. It is intended for processing in a normal motion picture negative developer. The development time for Double-X film to reach a control gamma of 0.70 is about half way between the times required for Plus-X and Tri-X films.

The results of an industry-wide evaluation program indicate that Double-X may soon become the standard medium for indoor and low-light level shooting.

At Desilu studios, for example, the "Jack Benny Show" is shot entirely in the new medium, director of photography, Bob De Grass, ASC, said. The speed of Double-X film proved to be even better than expected.

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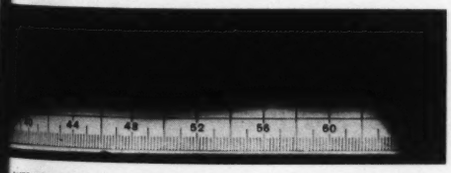
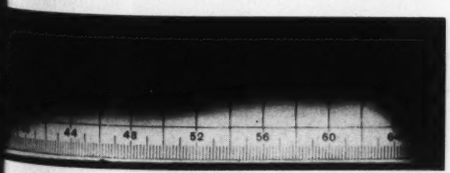


WEDGE SPECTROGRAM showing color sensitivity of Eastman Double-X Panchromatic Negative 5222 by daylight January 8, 1960.



WEDGE SPECTROGRAM showing color sensitivity of Eastman Double-X Panchromatic Negative 5222 by tungsten light January 8, 1960.

Factors involved in

RELEASE PRINT SOUND QUALITY

Best procedure is to do a good job of original recording, choose a reputable film laboratory, then carefully inspect and audition each release print.

How can the 16mm film maker insure that the release prints delivered by his film laboratory will have top sound quality?

The answer to this question involves both the film producer and the laboratory, plus a high degree of cooperation between both, according to General Film Laboratories, Hollywood, which has set forth some rules and sound technical advice in an article on this subject in Vol. 2, No. 5 of *Rewind*, the company's monthly newsletter to producers.

Obviously, the *Rewind* emphasizes, the starting point is the original recording, which involves using the right microphone for the job, use of carefully matched sound recording equipment which should include a professional machine capable of recording a reasonable wide range of sound, and proven sound recording materials. Other factors, it is pointed out, are the sound source itself, controlled acoustical conditions and background noise, and other elements involved in sound environment. The better the original recording, the more quality can come through in the print.

The next important step is rerecording—mixing the various sounds into a final composite track, either magnetic or optical. If it is magnetic, there will be still another step—transferring the mixed magnetic sound to the optical printing track. Here electro-printing is widely used, and this procedure will be discussed in detail a little later on.

The film laboratory first enters the picture in processing the eventual optical printing track. From this point on the producer can control his product—first, by already having chosen a reputable professional laboratory and, second, by auditioning the laboratory's work upon delivery of the release prints.

This is particularly pertinent and valuable advice for independent 16mm film producers, and in-plant and industrial film production heads making films that are expected to measure up to the best professional product when screened.

The processing of a sound negative is extremely important in determining the quality of sound on the release print. With this in mind, the usual laboratory procedure is to make frequent test checks with the people who do the sound-on-film recording. Cross modulation tests are made on variable area recording conditions, intermodulation tests on variable density recording conditions. An analysis of these sound tests after the test film footage is developed and printed, aids in establishing the recording exposure and laboratory processing conditions that will produce maximum sound quality.

When this work is completed, the laboratory will have a processed optical printing track and the edited reversal or negative photographic rolls—ready for printing. This brings us to the elements involved in the printing process:

1. Sufficient printer light
2. Close contact between the sound negative and the printing stock
3. Steady movement of the film in the printer
4. Control of slippage between negative and print stock

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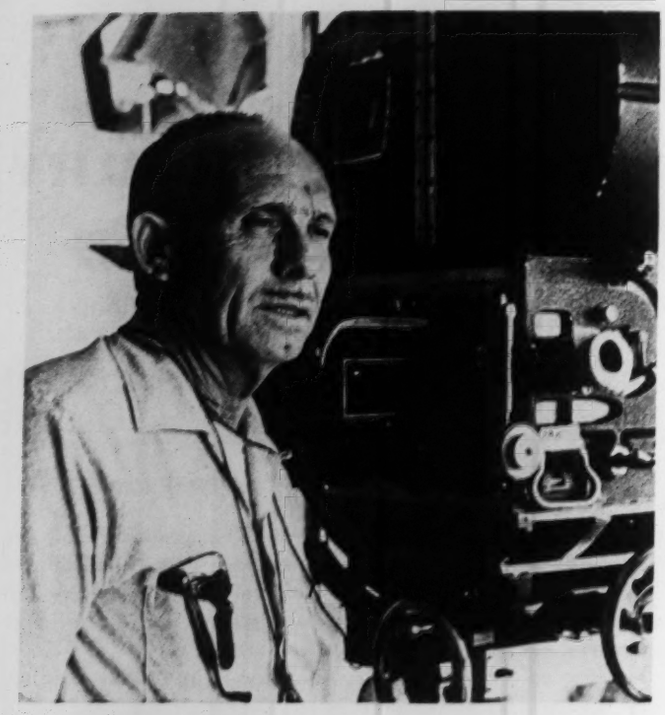


TED McCORD, ASC, who directed photography of "Private Property," believes that dramatic cinematography is often nullified by use of fill light. "What is left out in photography often is more significant than what is shown," he declares.

Creative use of filters and dramat
camera angles enhaced the photography

"PRIVAT RO

"PRIVATE PROPERTY," an independent production now being released in the top art theatres of the nation, is an extraordinary motion picture—not only because it is superlatively well written, directed, acted and photographed, but because it has all of the technical finish of a picture costing in the millions, while having been made on the incredibly low budget of $59,525.

Time magazine describes it as a significant example of the "new wave" of American films combining vigorous story-telling artistry with low-budget production to challenge the best of European art films. *The Hollywood Reporter*, in commenting on the picture's technical excellence and obvious lack of compromise with quality, says: "Negative cost on 'Private Property,' it is said, was less than $60,000. It is the only cheap thing about the picture."

Hollywood Variety, a daily trade paper noted for its brutally honest film reviews, stated: ". . . A unique set of circumstances makes it possibly one of the year's most important American films . . . Writer-director Leslie Stevens builds fascinatingly to a wild, staggering final 20 minutes that will leave audiences in a sweat . . . The story has strong interest because it stands out from the pile of hash and rehash that audiences have wearied of . . . *Biggest asset in the film's good looks is the first-rate photography by Ted McCord, who captured an exciting mood and provided some interesting camera techniques.*"

Variety's tribute to the superb photography of "Private Property" is well-deserved, for Ted McCord, ASC (Academy Award nominee for "Treasure of the Sierra Madre" and "East of Eden") had never before filmed a low-budget picture, and it loomed as a formidable challenge to his skill and experience. "When Leslie Stevens, a newcomer to film production, first approached me to photograph the picture, I declined," McCord explains, "because I felt I was not suited to low-budget production and also because, frankly, the budget was not sufficient to pay my usual salary. However, after I had read Stevens' exciting script and had gotten to know the man for the artist that he is, I would gladly have shot the picture without pay. Now, after having photographed 'Private Property,' I feel that such pictures hold the highest hope the industry has of making films that are fresh, bold, imaginative and unconventional."

"Private Property" is not a pretty story. Fraught with Freudian undercurrents, it is an incisive psychological study of two warped young hoodlums who systematically set about seducing an essentially decent young housewife, frustrated by the inattention of her business-preoccupied husband. Slowly breaking down her defenses by playing on her weaknesses and getting her drunk, they lunge toward the moment of glaring truth in which both are forced to face the realization that, despite their switchblade-bolstered stomping and trumpeting, they are actually incapable of completing the seduction. Their ensuing vented fury culminates in a frenzied underwater fight in a swimming pool and inevitable violent death for both antagonists.

The fact that the film has been denied a Production Code Seal and has aroused the ire of the Legion of Decency in no way diminishes its validity as a sound clinical study or as filmic art of the highest order. It is that rarity, a genuinely *adult* motion picture (never meant to be shown to children) and it is told with block-buster impact and use of the cinematic medium that is nothing short of brilliant.

Photography Keyed To The Mood

In keying his photography precisely to the mood of impending disaster, McCord threw away the book and managed to create from the very first frame an ominous low-key atmosphere, even in sequences shot in bright sunlight. This was accomplished partially through the use of filters and dramatic camera angles, and partially through the application of cross-lighting and semi-silhouette. McCord vigorously affirms his conviction that dramatic photography is often nullified by fill-light (what he terms "the margin of safety") and that what is left out in photography is often many times more significant than what is shown. When, however, he is called upon to interpret the glamour of the female lead, his camera adds a magic touch—but it

ROPERTY"

By HERB A. LIGHTMAN

is not glamour for the sake of glamour, and even then it is definitely unconventional in formula.

The film opens with a prologue before titles in which a desolate stretch of fog-swept beach is shown. Suddenly, two sinister young characters loom up into camera like beasts of prey. They first intimidate a gas station owner and then, spotting an attractive woman in a sports car, forcibly persuade a motorist (who has given them a lift) to follow her home. The beach sequence was shot one morning in a heavy overcast, although the company had hoped for sunlight. Undismayed by the flat light encountered, McCord decided to enhance the chilling effect by placing a smoke pot out of frame and shooting the sequence through a combination of fog and contrast filters. Halfway through the shooting the sun came out, but so expert was his control of the filters and other photographic elements that the various shots match and intercut perfectly.

After the young hoods follow the woman, the remainder of the action takes place inside her home, around her swimming pool and in a deserted house next door. Stevens actually used his own home and pool as the main locale. The house next door was conveniently empty and he rented it for a month to use as a location.

The two main problems in shooting the interiors involved light and space. The lighting problem was solved through the use of Garnelites, a recent development in portable photographic lighting equipment.

Since Stevens' home is located on a view lot above the Sunset Strip overlooking Hollywood, it has large expanses of glass to take advantage of the view. In shooting the picture, the large windows constituted both a blessing and a curse. They helped provide an overall general level of illumination when the camera was shooting away from them; but when the camera was shooting toward them, it was necessary to cover the glass with large neutral-density filter panels to prevent the exterior scenes from "burning up" and at the same time afford a balance with the interior illumination.

Wide-angle Lens Meets Challenge

The house next door presented an even greater challenge from the lighting standpoint. There is a room upstairs overlooking the swimming pool which the two would-be seducers use as an observation point to chart the movements of their intended victim. It is a small room, hardly more than 10 x 14 feet in size. By using a wide-angle lens it was possible to get an adequate camera angle, but placing the lights was something else again. Mounting them next to the camera (the easy way) would have produced flat lighting totally out of key with the desired mood. Since the room was located on the second floor it was impossible to project light

Continued On Page 500

TWO CAMERA SET-UPS which show ingenious devices used to produce unique lighting effects for scenes in "Private Property." In upper photo, the shadow of a multi-panelled window was required, and was supplied by mounting strips of cardboard on a frame which was set before the key light. In picture at right, illumination on actress Kate Manx is softened by shadow pattern cast by basket-weave cukaloris placed before the key light.

JAPAN'S MAST F M

EIJI TSUBURAYA directs remote control of "monster" he created for the Japanese science-fiction thriller, "The Three Treasures."

TOSHIRO MIFUNE, star of the Toho Studios production, "The Three Treasures," fights off mythical sea serpent conceived by Tsuburaya and fabricated under his direction especially for this production.

MINIATURE SHOTS of the sea serpent were combined with live action scenes of the serpent's adversary, and demonstrate high perfection in the art.

EIJI TSUBURAYA, veteran cinematographer of Japan's Toho Studios, holds one of the most unusual jobs in the movie world. He photographs monsters.

What sets him apart from other cameramen who work in this specialized field is that he's a sort of jack-of-all-trades who not only films the scary creatures, but dreams them up, writes stories around them and assumes many of the chores of producer and director to bring them to the screen.

In recent years these monsters have comprised a lengthy parade. American audiences first saw Tsuburaya's work in the thriller "Godzilla," which starred a prehistoric reptile. Equally gruesome monsters crawled or walked through the films "Radon," "The H-Man," and "The Mysterians." Two of these Japanese-made movies played several large American cities simultaneously.

The man behind these ambitious projects is a glutton for work. Recently he tackled no less a project than the mythical creation of Japan for the three-hour epic, "The Three Treasures." For this picture, said to be Toho's 1000th production and billed as Japan's "The Ten Commandments," he conjured up a giant, multi-headed sea serpent to torment the film's star, Toshiro Mifune ("Rashomon" and "Rickshaw Man").

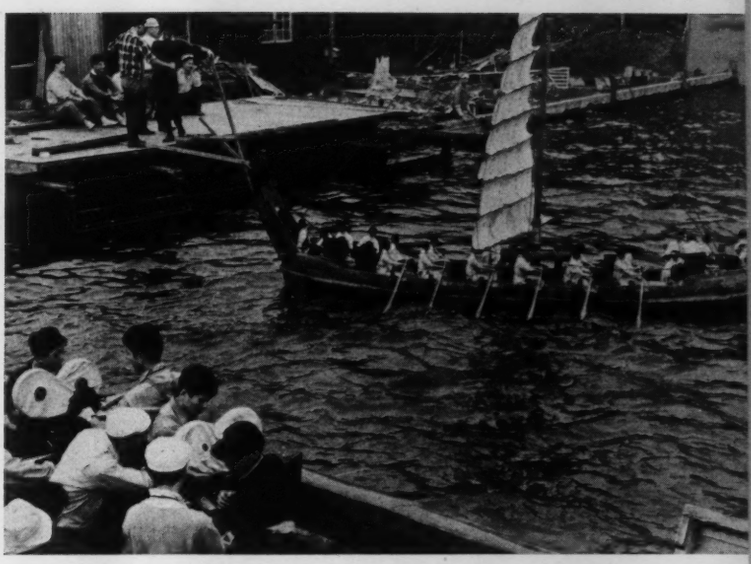
While Tsuburaya was at work he also whipped up the eruption of Mt. Fuji and a fearsome storm at sea for good measure.

Although this picture was a group effort in which many persons at the

ST OF MONSTERS

een imagination and resourcefulness mark the nusual films conceived, produced and photo-raphed by Eiji Tsuburaya, Nippon's leading ex-onent of science-fiction thrillers.

By CLIFFORD V. HARRINGTON



FINE EXAMPLE of Japanese miniature work is the boat and oarsmen pictured above in Toho Studio pool, and being photographed with two Mitchell cameras (lower left).

studio took part, it was Tsuburaya, the photographer of monsters, who contributed much of the film's most dramatic moments.

While his specialty is weird creatures, he also masterminds all the miniature and special effects work required for other Toho pictures in production.

His private domain at the edge of the lot is a barn-like structure surrounded by a cluster of workshops. From this stage he commands a small army of miniature makers, special effects men and photographers.

A typical Tsuburaya picture begins when he comes up with some new and horrible being. Immediately he hammers out a rough plot and hands it over to scenario writers for completion.

At the same time he sets his workers to the task of making the miniatures or devices which will be used in the picture.

Meanwhile he labors over a camera in his home workshop, trying out the new photographic techniques which he will employ.

Finally the actors start to work on one sound stage, while he and his assistants shoot their portion of the film in secret in another.

No Tsuburaya picture is put on film without a great deal of pre-production preparation for the camera work. He and his men carefully determine the lens, camera speed and the lighting for each take, so that these special shots will match the scenes which include live actors.

In "The Three Treasures" Tsuburaya's shots of the sea serpent were combined with scenes of the star, Mifune, to show him battling the monster. Here careful planning of angles and relative image sizes was most important so that both film segments would match when put through the optical printer.

Tsuburaya is successful because he is an inveterate ex-

Continued On Page 502

ji TSUBURAYA uses storyboard extensively in planning his science tion productions.

CAMERA CREW, under supervision of Tsuburaya, sets up camera to shoot miniature of a lava flow for the Toho Studios' "The Three Treasures."

THE TIME TRAVELER (Rod Taylor) at the controls of his Time Machine, begins flight which is to project him forward to the year 802,701 AD. Scene is from MGM's "The Time Machine."

Unique lighting and cinematographic innovations mark the photography of M-G-M's

"The Time Machine"

By DARRIN SCOT

M-G-M'S PRODUCTION of H. G. Wells' science-fiction classic, "The Time Machine," is a rousing adventure into the fourth dimension of Time—transporting the hero of the story (along with the audience) forward to the year 802,701 A.D. George Pal's visually imaginative production achieves striking impact through the art direction of George W. Davis and William Ferrari, the special photographic effects of George Warren and Wah Chang, and the outstanding color cinematography of Paul C. Vogel, ASC.

Briefly synopsized, the plot concerns a young Victorian scientist (identified only as "The Time Traveler") who, in the year 1899, invents a vehicle capable of voyaging into the fourth dimension—Time. After making a successful test with a tiny scale model, he goes into his laboratory, climbs into the seat of his passenger-sized Time Machine and slowly pulls the lever.

The walls shake, lights dim, and he is off on his flght through the Future. At first he goes slowly, advancing only a couple of hours. Then, bolder, he pulls the lever all the way back and whirls away into time. Through the large skylight in his laboratory we can see the sun racing across the sky, the stars blinking on, the moon skimming by in its orbit, and a tree changing from bare branches to blossoms to full foliage as the seasons rush by. As he goes even faster, his headlong flight through the years is whimsically illustrated by rapid costume changes on a mannequin in a shop window across the street from his house.

He interrupts his startling voyage with stops in the years 1917 (World War I), 1940 (World War II) and 1966 (when he finds an all-out World War III raging). The cataclysms of the nuclear warfare set off earthquakes, as a result of which he and his machine are engulfed by lava and trapped in a rocky tomb until, 8,000 fleeting centuries later, erosion sets him free and he halts the machine for the last time in the year 802,701.

He steps forth into a veritable Paradise of exotic trees and rushing rivers where once had been his London home. This lush locale is populated by a race of blond adolescent boys and girls, the Eloi, who are strangely apathetic to everything about them. They live in a sort of vegetable state above the ground, held in bondage by the Morlocks, a race of hideous creatures—half-man, half-ape — who live in the darkness of caverns deep underground. Weena, a beautiful Eloi girl, explains to the Time traveler that the Morlocks feed and clothe them, but the Eloi must do as they command. When they are summoned below by the Morlocks, they go and never return.

In quest of his Time Machine, which has been stolen by the Morlocks and locked behind the panels of a huge bronze sphinx, the Time Traveler chances upon a cavern filled with skeletons. It dawns on him that the underground denizens are cannibalistic and that this is why the Eloi never return from the Morlocks' caverns.

He is determined to inspire the Eloi to defend themselves and build their civilization. But when a low siren is heard, the Eloi—including Weena—walk entranced to the Sphinx and enter the open panel. It closes before the Time Traveler can reach it.

Climbing down an air-shaft into the subterranean caverns, he finds the Morlocks herding the Eloi to their fate. Knowing the Morlocks are afraid of fire, he attacks them with a torch. First Weena and then the other Eloi respond to his cries to help him fight, and finally the Morlocks are subdued —their domain left in flames.

He jumps in his Time Machine and spins back through the ages to a date five days after he started the journey. He relates his story to waiting friends, but they are skeptical. Determined to rejoin Weena and help the Eloi build a new world, he once more mounts the

Time Machine and whirls off into the future.

Photographing a story like "The Time Machine" was an interesting challenge to Director of Photography Paul Vogel—not only because it was loaded with problems of a mechanical nature, but because a certain correct psychological aura had to be created and maintained. The story is not fantasy, but science-fiction—something that very possibly could happen when Man's knowledge of physics progresses a bit farther. Therefore, everything that happened had to be visually believable. Whereas Vogel might have used fog filters or other obvious devices to suggest the exotic character of life on this planet 8,000 centuries hence, he wisely avoided them—and the result is much more credible.

The film begins, conventionally enough, in the Time Traveler's London home just at the turn of the Century. The set is richly designed to the Victorian era with its wood-panelled decor and rococo furnishings all done in lush warm tones. Vogel illuminated this set with amber light to paint up the mellow atmosphere of the period and to provide a strong visual contrast to the futuristic goings-on that were to follow. In moving into the future the technical problems increased accordingly.

For example, when the Time Traveler takes off through the fourth dimension, his machine is located in his laboratory. Since the roof of the room is mainly open skylight, the light or darkness outside sets the lighting key for the scene. As the Traveler whirls faster and faster through Time, this lighting key must change accordingly.

PAUL VOGEL, ASC, has photographed many productions for MGM, including "Battleground" (1949) for which he received an Academy Award.

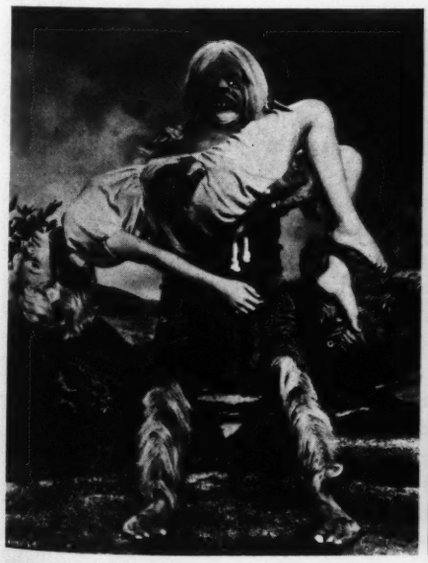
In order to simulate such an effect, Vogel had huge circular shutters built and mounted in front of each "brute" arc used to light the scene. These discs, roughly 7 feet in diameter, were divided into four segments like a pie. One segment was left clear to indicate daylight, another had a pink gelatin (#14) to indicate sunrise, another had an amber gelatin (MT-2) to indicate evening, and a fourth had a blue gelatin (#25) to indicate night. As each day flew by in a matter of seconds these discs were turned by hand from below by means of a chain and gear arrangement. Simultaneously the arcs were raised and lowered by means of see-saw devices to contrast the *high light* of midday with the *low* light of evening. Arcs illuminating the backing outside the window were alternately masked by mechanically-operated flat shutters synchronized with the discs.

In the sequence where the Traveler speeded up the machine so that each day became a mere flicker, Vogel had the circular shutters converted so they were composed of alternating black and white segments only. The shots through the skylight showing the rapidly changing conditions outside were accomplished later by means of special effects animation to coincide with the changing light on the set.

Aside from the main challenge of synchronizing all of the discs, shutters and see-saws so that a uniform result would be produced, there was the problem of balancing the light intensities as they were transmitted by the different colored gelatins, so a consistent exposure could be maintained. For example, the blue gelatin transmitted only ¼ the amount of light passed by the clear segment. To equalize exposure, the pink and amber gelatins were doubled in thickness and white gauze was placed over the clear areas.

Creating these lighting effects right on the set not only produced a much more realistic result, but saved thousands of dollars which otherwise would have been spent to produce a similar

Continued On Page 496



MONSTROUS MORLOCKS, denizens of underground capture queen of earth people.

TIME TRAVELER engages Morlocks in batile to death in their cave dwelling.

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CINEMATOGRAPHER Len Heitman takes a meter reading of the light prior to going aloft in helicopter with Director John Dixon to shoot scenes of Simca Aronde automobile in action for series of commercials for Australian TV.

HERE THE 'COPTER paces the Simca in an impressive demonstration of car's roadability features. The tracking shot was made from camera car traveling parallel with car and craft.

SOUND FOR THE commercials was recorded on quarter-inch tape. Here Narrator John Worthy discusses upcoming sync sound takes with engineer Ron Haymes.

The Production Of TV Commercials In Australia

Australia's film industry is booming. Demand is big for filmed TV commercials of high quality.

By E. G. MORCOM

CAMBRIDGE FILM and TV Productions Pty. Ltd. is one of several Melbourne studios very active at present producing a variety of TV commercials, which usually demand every trick in the trade. Indeed, the film industry here is a very active one today, made so by the constant demand for filmed TV commercials of high quality.

All our TV film production is on 35mm negative and, in most cases, reduction prints are supplied for transmission. At present, only two Australian television stations have 35mm film facilities for commercials.

A typical and one of our most recent TV commercial assignments consisted of live-action presentations of the new Simca Aronde automobile for the car's local distributor in the form of one 60-second and two 20-second spot announcements. These were conceived in a manner to tie in with the famous Simca Aronde motif—a winged swallow—and also to emphasize salient points of Simca's advertising in other media.

The general pattern of the Simca commercials was a re-creation of "on-the-spot" test demonstrations. In addition to pointing up the internal features of the car, we were to dramatically emphasize the car's body styling and its many driving features.

After scripts were written and approved, we arranged for use of a local airfield for our shooting site, and chartered a Bell 47J helicopter from one of the local airline companies for use as an aerial camera car.

We divided the shooting into four phases: 1) static shots of the car's interior, 2) dolly shots made on the ground with narrator John Worthy introducing the car, and 3) tracking shots of the car pacing the aircraft, with the camera mounted on a camera car, plus spectacular helicopter-to-ground shots of the car in action.

Our chief cameraman, Len Heitman, directed the photography of the series, using a blimped 35mm Eclair Camerette for sync sound footage plus a hand-held Camerette for scenes shot from the air. At times a 35mm Eyemo was used for hand-held shots.

In charge of sound recording was Ron Haymes, who used a Byer "66" quarter-inch magnetic tape recorder to

record audio for all sound shots. The result was later transferred to 17.5mm tape at the studio.

The Simca car was driven by actress Dorothy Moore for the "class" and "style" shots. The high-speed demonstration shots had Commonwealth Motors' Max Gault behind the wheel.

In order to control certain of the aerial tracking shots from the ground, Director John Dixon employed short-wave radio communication with the 'copter pilot.

The foregoing is a brief account of the type of TV film work being done out here at this time and, although, not large by Hollywood standards, nevertheless is both substantial and indicative of the new horizons for film making that television has opened up for the film industry in Australia. ■

NEW DOUBLE-X FILM

Continued From Page 485

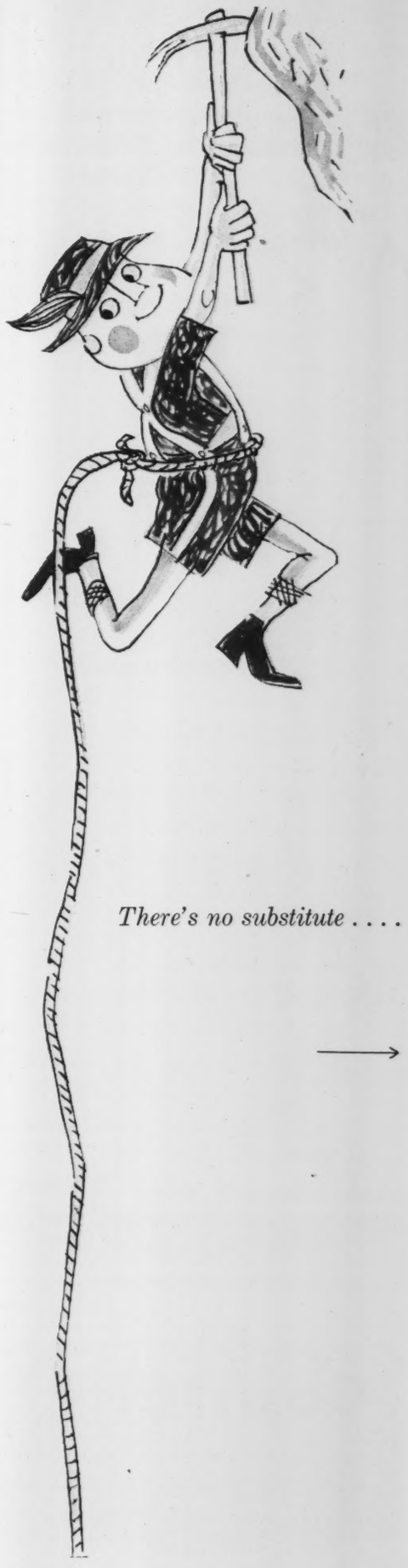
Initial Double-X Film shooting began at f/5, but was soon cut down to f/5.6, which is exactly the same exposure used previously with Tri-X. The lighting level averages out to 150 foot-candles; shooting is done with three cameras, using 150 foot-candles for the back crosslight, 100 foot-candles for the crosslight, (which works as a front light for the side closeup cameras), and 100 for the front light.

Rather than diminish lighting levels, the lens is stopped down to give greater depth of field. As two cameras generally are working with 4″ lenses, an f/5 to f/5.6 stop is almost imperative.

One of the standard techniques of the show is to pan out to catch audience reaction, and the depth of field possible with Double-X Film greatly enhances such shots, De Grasse said.

Columbia Pictures is using Double-X film, along with Plus-X, on two productions, "The Donna Reed Show" and "Two Faces West". Exteriors are shot on Plus-X negative, as usual, but Double-X negative is used for interior scenes. Indoor lighting, at a level of 200 foot-candles, calls for an aperture of f/5.6. (Eastman recommends lighting at 200 foot-candles for an aperture of f/5.6.)

Use of Double-X film has enabled Columbia cameramen to lower lighting levels while maintaining standard Plus-X film apertures. This not only achieves lighting economies but also assures



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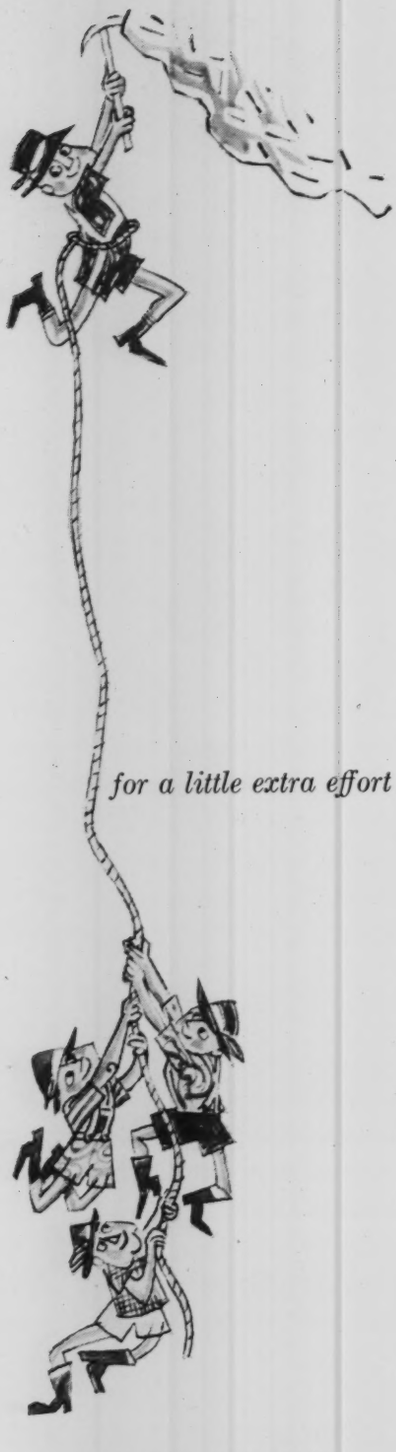

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more comfortable working conditions for the actors, directors, cameramen and others since less set lighting means lower temperatures.

Walt Disney Productions used Double-X film for a segment of its Disneyland TV series, Bob Gibeaut, chief of the camera department, said. Results were so good that the film has also been used for shooting "The Absent-Minded Professor," currently in production. In order to run a cooler set and reduce lighting costs, shooting took place at 80 foot-candles level, with an aperture of f/4.

Warner Brothers uses Double-X film on "Bourbon Street Beat," "Maverick," "Lawman"—in fact the whole gamut of WB productions for television. Double-X film is employed on all interiors while Plus-X is used outdoors.

The WB camera department was particularly pleased to find that Double-X gives them excellent whites, without requiring blocking techniques. Reports from Warner Brothers indicate that the two materials may be intercut easily in printing.

Shooting "The Brothers Brannagan" for Columbia Broadcasting System at Metro-Goldwyn-Mayer studio, Director of Photography Frank G. (Kit) Carson, using Double-X Film, has gained one full stop exposure over the film which he had previously used.

He had earlier been shooting with a different film at f/3.2 at a lighting level of 125 foot-candles. With Double-X he keeps the lighting level the same but stops the lens down to f/4.5. Sharpness is an important factor in television productions, he emphasized, adding that he gets it with Double-X film, and with a minimum of granularity.

For closeups he opens up to f/3.2, cuts the shutter from 170 degrees to 90 degrees and retains the same 125 foot-candles light level.

Carson uses a zoom lens for the opening shot of every show, starting with the brothers Brannagan, backs to camera, walking 32 feet, turning to face a fast zoom-in to a tight two shot. The aperture is f/5.6 at 175 foot-candles, an increase of only 50 foot-candles over the normal illumination level. With the film stock previously used, he had to shoot with almost triple the light at the same f/5.6 stop.

Director of Cinematography John Nickolaus, Jr., working on "Rawhide" at Metro-Goldwyn-Mayer, employs the new material on all interiors and night exteriors. While he still shoots all daylight exteriors with Plus-X film, he also keeps at least two rolls of Double-X film on hand at all times for emergency use. Should daylight diminish, or scheduling require "after-sunset" shooting, he immediately orders the switch to Double-X film.

Howard Schwartz voiced keen satisfaction with the "terrific speed and wonderful quality" of Double-X film after using it in shooting scenes for "The Rifleman" for Four Star Productions. "It shows a minimum of grain in the white and good detail in the shadows, and the highlights hold up very well," he said. At an aperture of f/4.5, Schwartz shoots Double-X under a lighting level of 125 foot-candles.

When he is shooting an exterior set by artificial light, he simulates sunlight by going up in key, and produces the illusion of daylight by using a 150 to 170 foot-candle lighting level at f/6. Sometimes he takes the master, long-range shots outdoors in Plus-X film and the closeups indoors with Double-X, using high-key lighting. It is difficult to tell the difference, he said.

Schwartz was particularly pleased with the performance of Double-X when using a zoom lens; the added stop in exposure gained is of great help, focus-wise, when zooming to a 6" lens, he pointed out.

Still another Director of Photography who has tested Double-X is George E. Diskant, ASC, of Four Star Productions. Diskant photographed segments of "The Rifleman" and also of "The Law and Mr. Jones" using the new Eastman pan film. He finds it "very good stock," adding, "I am very happy with it." For TV film photography, he says, Double-X offers a lot of "depth." The new film's potentiality for enhancing characterizations and for bringing out skin textures is excellent, Diskant emphasized.

The ability of the new material to extend daylight shooting well into dusk, in conjunction with its ability to reduce lighting expenditures, constitutes a major contribution to the filming of television productions, where flexibility is a key factor.

This article is based upon a full technical description of Eastman Double-X Panchromatic Negative Film given at the May 1-6, 1960 Society of Motion Picture and Television Engineers Convention in Los Angeles. Illustrations are used with the permission of the S.M.P.T.E. JOURNAL, which plans an early publication of a technical paper on this subject. ■

COLOR CORRECTION

Continued From Page 480

Irrespective of the distance from the rear surface of the lens to the focal point in parallel light (B.F.) the equivalent focal length (E.F.) of a lens is defined as the distance from the second nodal point (cardinal point) to the second principal focal point (Fig. 5).

We are familiar with the fact that even with infinitely distant objects the image size is proportional to the focal length of the lens used. The 50-mm lens on miniature cameras will yield an image one-third the size of that formed by a 6-inch lens.

Now, it is a most unfortunate fact that the cardinal points have positions dependent on the refractive index of the glass comprising the lens. Expressed in other words, each color has its own cardinal points which can be distinct from those of any other color. Now, if the lens is color-corrected axially, i.e., if the red and blue colors unite in one focal point on the axis, and if the nodal points in the two colors are different, automatically the lens must have different focal lengths in the two colors. This is shown in Fig. 6.

However, these different focal lengths, as we saw previously, mean differently sized images: that is to say, the magnification will be different, depending on the color (Fig. 7). It is for this reason that this second type of chromatism is spoken of as chromatic differences of magnification, or lateral color.

In a lens afflicted with this aberration the points in the margin of field are drawn into spectra, or rainbows. This particular aberration is most annoying even with black-and-white film, for it quickly sets the limit of usable field by producing a graded soft focus near the margins.

In the correction of this aberration, advantage is taken of the fact that some lens systems will give a spectrum with the red end closer to the axis; while others will give a rainbow oriented the other way around. In the correction of lateral color, then, systems of these opposing characteristics are balanced against each other until a satisfactory compromise is found.

We have now seen the two types of pure chromatic aberration—longitudinal chromatic aberration and chromatic difference of magnification. The

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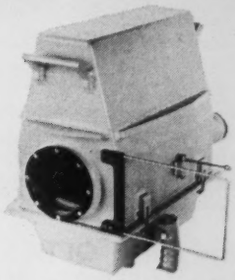

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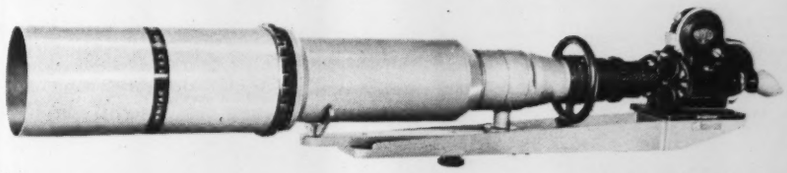

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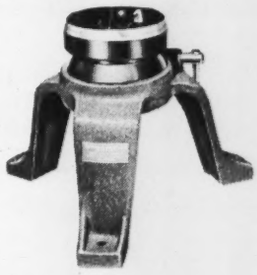

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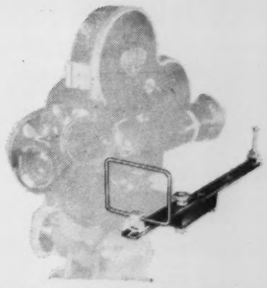

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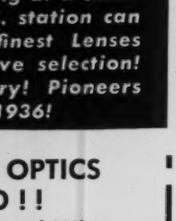

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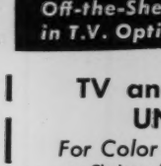

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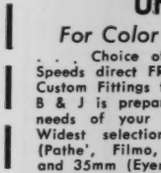

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former, the simpler type, is manifested by the absence of one single focal point for all colors, with the existence of a distant point for each separate color. This is a very troublesome aberration and is corrected in all but the most inexpensive lenses. These lenses can be spoken of as being "color-corrected" only to the extent that there is little or no shift of focal point with color.

This aberration is in theory independent of the aperture of the lens, though in practice its effects will be mitigated by stopping-down, for then the effective depth of focus is increased and the image is less sensitive to improper focus. Longitudinal chromatic aberration is corrected by combining a positive lens with a negative lens of higher refractive index and dispersion and of such power that the dispersion of the positive lens is annulled, but its convergence not canceled, so that a union of the red and blue colors occurs on the axis.

The second chromatic aberration is more complex and manifests itself in differently-sized images in different colors. This chromatic difference of magnification is troublesome even in black-and-white photography, and the best lenses are corrected for this.

Only the photographic objectives designed with the aberration pared to tolerable limits can be spoken of as "fully color-corrected." This aberration is proportional to the image height, thus becoming worse toward the corners of the picture. Stopping down the lens is without effect on this aberration. It can be corrected by employing combinations of elements of opposing tendencies, so that one set cancels the effects of the preceding.

The corrected lens of the reputable makers have all been designed with this aberration in mind and can justly be spoken of as being fully color-corrected. However, it is well to remember that nothing perfect is manufactured, and that with the most refined tests it might be possible to demonstrate some lateral color with the most nearly perfect lens made. This would be without significance, however, since the test necessarily would be artificial and would not correspond to the conditions of use of the lens. If the longitudinal chromatic aberration has been corrected, and if the lateral aberration cannot be detected on the film, for all practical purposes the lens is "fully corrected."

Full color-correction is as essential in the best photography and projection with black-and-white emulsions as it is with color film. The effect of lateral color in the case of the former is to create a soft focus effect toward the margins, while with color film, registration difficulties are the consequence of this abberation.[2]

[1] Wall and Jordan, "Photographic Facts and Formulas," American Photographic Pub. Co., Boston, Mass., pp. 7.

[2] Text is abridgement of eariler article in A.C. by Allen E. Murray.

"THE TIME MACHINE"

Continued From Page 491

effect by means of optical printing.

As the Traveler is entombed by the lava flow—presumably for thousands of centuries of rushing time—he is seen against a background of huge rocks piled around his Time Machine. The sequence was shot against a solid blue backing to permit double printing of the rock background. As the erosion of time gradually liberates him, the rock background melts away by means of animation. However, the rocks piled about the machine were the real thing, and these had to be pulled out of the way precisely on cue by means of concealed wires.

As the Time Traveler makes brief stops along the way in his flight through time, the changes in his physical surroundings had to be made apparent. In his laboratory this was done by gradually ageing the set until it seemed actually to fall apart in ruin. The street outside his home proved more of a problem, since a large area had to change radically in character through the ages. This was accomplished by photographing several scenes in a variety of locales, then combining them as traveling mattes to form a single composition. Although the resulting composite was produced through optical printing, the several scenes involved had to match exactly in photographic character in order to produce a realistic blend.

The sequences showing life 8,000 centuries in the future called for a strong photographic contrast between the above-ground world of the Eloi and

the underground domain of the dreadful Morlocks. In shooting the lush Eden of the Eloi, Vogel kept the illumination bright and relatively flat by using a front light source. The result enhances the almost two-dimensional character of the docile Eloi moving about their never-never land in a semi-dream state.

The Morlocks, on the other hand, were shadowy, sinister creatures who were never, at any time, to be shown too clearly. They are first seen only as patches of luminous gray-green darting about the shadows of the night foliage. Later, in their underground habitat, we see them a bit more clearly, but they are kept shadowy—not only to preserve the horror of the unknown, but to prevent the details of their elaborate make-up from becoming too obvious. Their physical aspect, designed by M-G-M Make-up Director William Tuttle, is a masterpiece of its type. The Morlocks, short and squat in stature, were covered with green latex "skins", and their faces distorted by grotesque masks having electrical "eyes" that glowed in the dark. The actors portraying these creatures (as ugly a lot as ever assembled on a sound stage!) held in their hands tiny switches connected by thin wires concealed in their rubber suits, by which they controlled the eye lights.

Theoretically there was no light at all in the underground caverns—and yet, the action had to be visible. Vogel gained the desired visual effect by using almost no front lighting, rimming the Morlocks with back-light and employing cross-light of a greenish hue that seemed to emanate from odd machines that bubbled and sputtered in the background. The light problem was further complicated by the fact that the set was too narrow to permit the use of floor lighting units; all lamps had to be mounted overhead. This created special difficulties in the fight sequence where the action ranged over a wide area of the set.

In lighting the cavern in which the Time Traveler finds the skeletons, Vogel used green light exclusively in order to point up the horror of the situation. He also devised an interesting effect to show that the Morlocks, living their bat-life existence, could be blinded by even a small amount of light; as the Time Traveler lights matches to ward them off, we see from the Morlocks' subjective point of view how these dim flickers appear to them as

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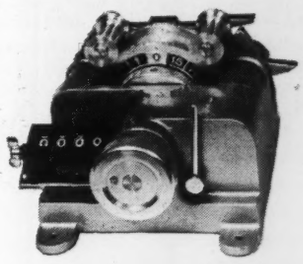

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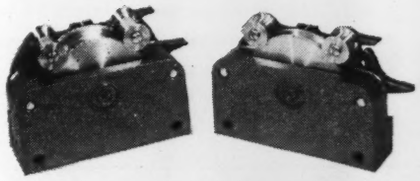

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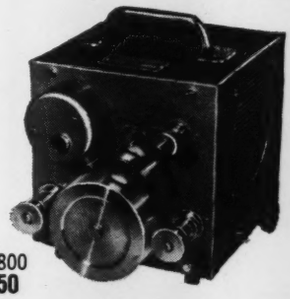

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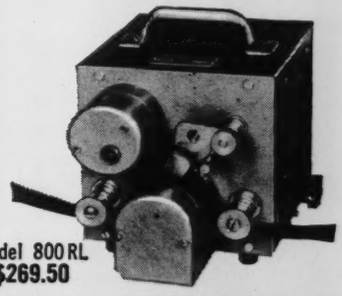

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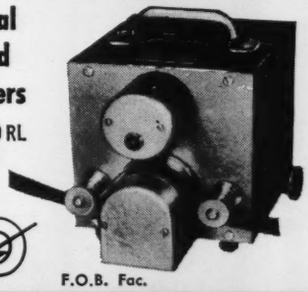

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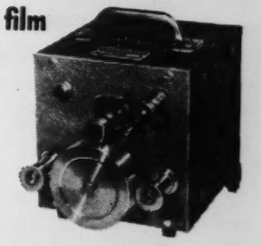

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Continued From Page 485

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6. Minimum roller abrasion
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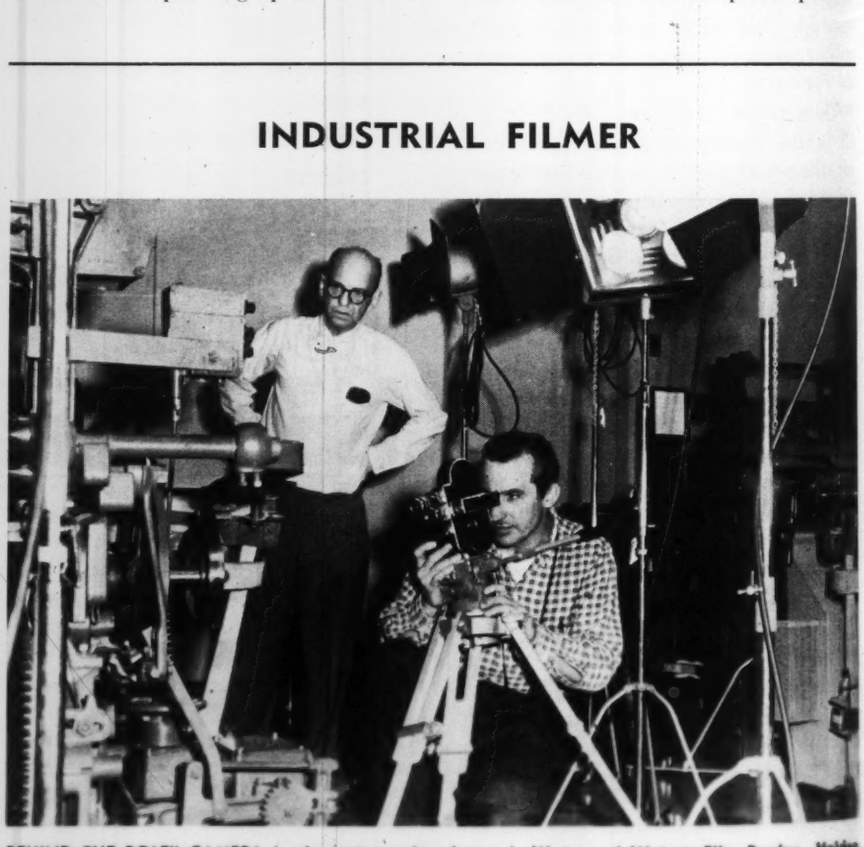
INDUSTRIAL FILMER



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Finally, after printing and processing, print lubrication is tied in with sound quality, since an overall lube coating of the emulsion surface is recommended for best performance of the release print in projection.

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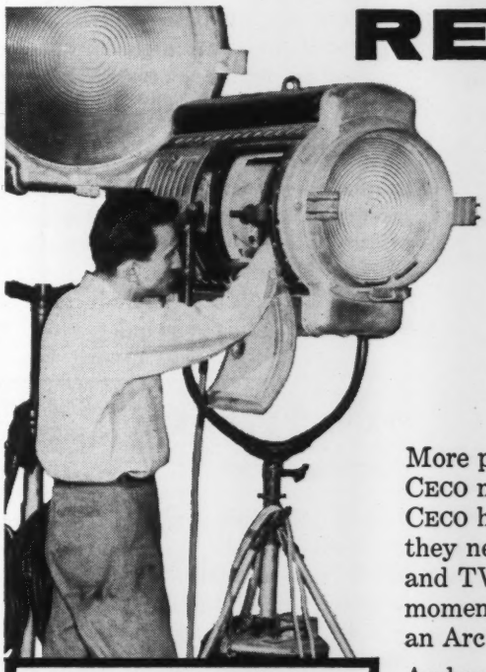

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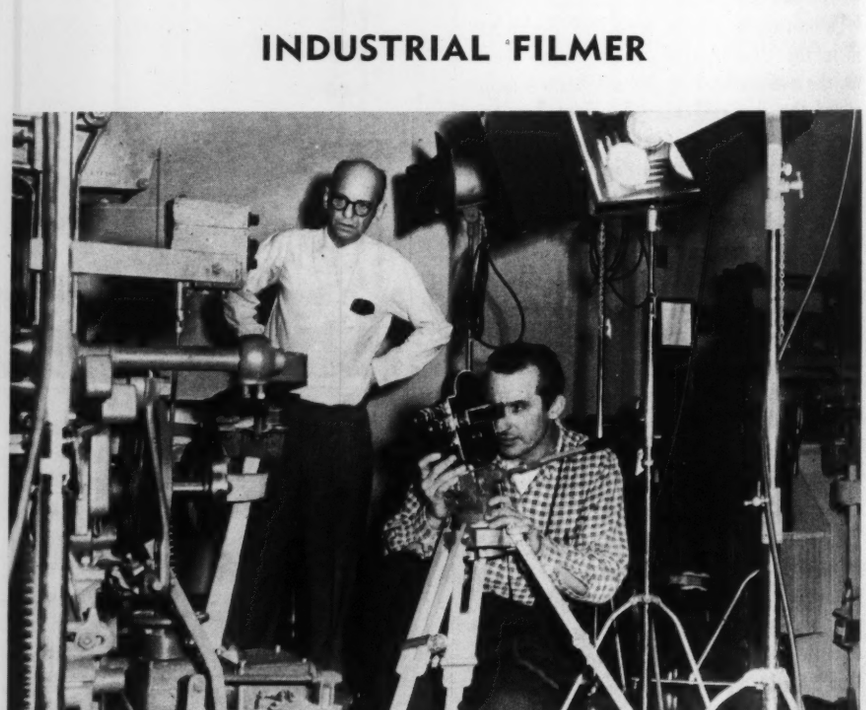

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magnetic mixed sound roll direct to the print—in place of the standard procedure of rerecording the magnetic sound to an optical sound image track, which is then processed, and used to print the track on the release print, in a film printer operation.

Why shouldn't the sound for all release prints be electro-printed?

Electro-printing is normally utilized for 16mm reversal prints—either color or black-and-white—in small orders. When a 16mm film goes to positive color or B/W printing it usually means a large release print order, in which the use of a photographic (or optical) printing track is most economical.

More time is required for electro-printing sound, than using a printing track. On small orders this is not a major factor, but on larger release orders it can be significant.

Then, even though the electro-printed sound quality is good there are limitations. The electro-printing process lacks the consistency of results that is characteristic of the normal printed sound track. Since each exposed-but-unprocessed print requires a separate rerecording run, there may be some quality variation within a group of finished prints. Also, the threading of print and magnetic track in optical recorder and magnetic playback machine is critical, combined with starting speed, with the result that lip-sync match is not always assured, as in normal sound printing.

And, there's the economic factor we've already touched upon. General Film's rate for electro-printing is one cent a foot additional to the normal composite print price. When this is compared to the rerecording rate for a printing track of .1069 (for film stock, rerecording, and processing) it becomes apparent the cost of electro-printing crosses over at eleven prints, and is an added cost for release printing from that point on—since there is no surcharge for printing sound from a printing track.

But electro-printing at .01 per foot has definite advantages.

1. For the 16mm Ektachrome film headed towards a color internegative and positive release printing, the first trial color reversal print track can be electro-printed, eliminating the need for a B-wind negative printing track. On approval, only one printing track need be recorded —the A-wind track used in positive color printing.
2. For the very small print order—a single print, or a few prints—electro-printing provides a standard, high quality photographic track on the print, at low cost.
3. For the very important interlock, or presentation for approval, the low-cost electro-printed track provides professional sound on a trial print, so that changes do not involve the economic loss of a scrapped printing track.
4. Alternative track versions. Many English language releases also call for but one or two prints with the same pictures but another language track. Electro-printing is then an obvious choice.

For normal motion picture sound printing, however, General Film recommends the use of a photographic printing track—for quantity order economy, consistent quality, faster delivery, and accurate reproduction of the producer's mixed sound. ■

"PRIVATE PROPERTY"

Continued From Page 487

through the window without constructing costly parallels outside. The alternative was to mount portable, lightweight Garnelites on high stands just outside camera range and to conceal other Garnelites about the set to provide the desired modeling illumination.

The entire photographic operation was characterized by the traditional "the-show-must-go-on" attitude, and photographic problems, large or small, were never allowed to delay the production for long. When the sun disappeared under clouds for long periods, McCord met the situation by mounting a combination of filters on the lens in order to continue shooting day scenes of correct contrast that would intercut with shots made earlier in full sunlight. At other times, faced with a similar problem, he would employ a 72-gamma filter on the lens, have black lipstick placed on the actors, and shoot scheduled day-for-night scenes.

One day, when a cloud-shrouded sun gave forth with constantly varying light, McCord took his exposure meter in hand and, as the needle wavered from one extreme to the other, compensated exposure by increasing or decreasing the opening of the Mitchell camera's variable shutter as the scene was being filmed.

Shooting interior scenes within the cramped rooms of the houses was accomplished with an Arriflex camera when there was insufficient room for the Mitchell. An 18mm wide-angle lens not only permitted an adequate angle of coverage but resulted in extremely dramatic compositions because of its inherently exagerrated perspective. Particularly striking use of the wide-angle lens was made in a scene in which the couple is shown dancing just before the attempted seduction. The wife, drugged with desire and alcohol, moves as in a daze. Her determined seducer drains the glass he carries in his hand and sets it on a table close up in the foreground, so that it fills the frame. The couple is then seen distorted by the glass as they undulate to the insinuat-

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ing music and move inexorably toward the bedroom. The symbolic implication jolts the audience with potent psychological impact.

As the attempted seduction fails due to the inadequacy of the two intruders, they clash in a frenzy of frustration, culminating in an underwater fight-to-the-death in the swimming pool. After one of them is fatally stabbed, the berserk killer pursues the woman, who futiley tries to hide beneath the surface of the water.

The underwater photography in this sequence is incredibly forceful, extremely well-photographed from a technical standpoint, and infused with a mood of horror that conveys itself almost tangibly to the audience. It was done by Camera Operator Conrad Hall, whom McCord says "is the finest operator I've ever worked with—a young technician of dynamic enthusiasm and creative imagination." Hall photographed the underwater footage with a Samson-Hall camera. Capable of holding his breath under water for several minutes at a time, Hall did not use an aqua-lung but hung lead weights around his neck to keep himself submerged. At the start of a scene he would sink to the bottom of the pool and lie still while he made a shot. When he ran out of breath the scene would end. For illumination he used a bank of Garnelites especially rigged and tested for underwater use, plus the pool light itself. As the first man is stabbed in the underwater fight he clutches his abdomen and blood pours out. To simulate this illusion, a sack of ketchup which he held in his hand was broken at the appropriate moment. After several takes the water contained a considerable amount of ketchup, but the resultant murkiness served to heighten the effect.

A particularly effective underwater shot in this sequence shows the woman in the foreground attempting to conceal herself beneath the water. Looming above her on the edge of the pool and mirrored by the surface is her would-be assailant. As he spies her in the water he sticks his foot in to push her under, and the reflection of his image on the surface is broken up into crazily swirling fragments, effectively symbolizing the disintegration of his mind.

The idea that a picture of the technical and dramatic excellence of "Private Property" could be produced on so low a budget is regarded as a phenomenon within the industry—conditioned, as it is, to believe that the more money spent, the better the resultant film.

"I believe that the most crucial aspect of economy in production is preplanning," Leslie Stevens maintains, explaining why he holds a contrary view. "Time is money in picture-making—therefore, time spent before you have the cast and crew on salary is pure gold. Before filming began on 'Private Property' I went out to the locations with a 35mm still camera and 'shot' the entire picture. That is, I went through the complete action from start to finish, using friends as stand-ins and visualizing the screenplay in terms of motion pictures, but rendering it in stills.

The question naturally arises as to whether these pre-production conceptions expressed in still form helped or hindered Ted McCord from the standpoint of freedom of photography. McCord himself stoutly affirms that they were of tremendous value to him in getting a precise idea of what Stevens had in mind—and that they in no way hampered his creativity. He used them as a starting point and then let his own imagination soar to enhance the effect.

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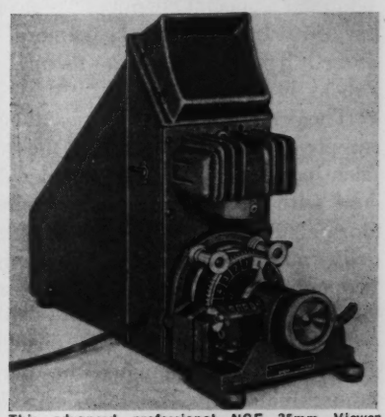

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Stevens draws an interesting parallel: "It was as if I had prepared a dinner and done all the cooking myself, taking pains to make sure that everything was right. Then McCord would come in and, like a master chef, add a little of this and take away a little of that, and come up with a totally different concoction infinitely better than anything I had done. The point is, my initial groundwork was necessary, but it was *his* contribution that made the final result into something special and unique." ■

JAPAN'S MASTER OF MONSTERS

Continued From Page 489

perimenter. From his experience he might have a good idea at what speed a camera should turn to show a miniature storm realistically on the screen, but if he is not sure, he will try the effect in front of a camera.

The storm in "The Three Treasures" offers some excellent examples of his work with miniatures. The ship models were made with such infinite detail that he was able to move his cameras in for screen-filling closeups of the tiny oarsmen models who propelled the ancient ships. The speed of the action corresponds well with the shots which include live actors and gives a strong illusion of reality.

Tsuburaya also has a penchant for working out simple methods for filming visual tricks. The star of the movie "The H Man" was a glob of pulsating jelly, which was required to seep under doors and climb walls, as if it were alive.

Tsuburaya and his assistants compounded a special chemical preparation for this. In front of the camera they forced it under pressure through the cracks in the various sets.

The wall-climbing bit was about as simple. Tsuburaya just had the workmen construct the sets upside down and with the camera grinding in the normal upright position he filmed the jelly running down hill. In the finished sequence the goo appears to crawl in defiance of gravity.

Later he and his men were faced with the problem of showing the persons contaminated by the jelly, shriveling and wasting away. Tsuburaya's craftsmen fashioned dummies from air-tight, rubber bags and substituted them for the live actors. As the cameras rolled in slow motion, the air was allowed to escape. On the screen the dummies collapse and shrivel in size realistically.

Recently we went behind closed doors to watch Tsuburaya at work on a new science-fiction picture entitled "World Of Space," the story of earthmen fighting a war with celestial invaders.

Tsuburaya was dividing his attention between his cameramen who were placing a Mitchell at one end of the stage and his technicians who were connecting wires to a space missile at the other. He and his key assistants were gathered around a charcoal burner to warm their hands and plan the next shot.

When the men had completed their preparations, Tsuburaya arose and supervised several trial runs. When he was satisfied with the results, the camera was turned on and the plastic missile with colored lights blinking hurtled through space. After two takes the shot was "in the can."

While his men were setting up for the next shot, we were invited to join the circle around the charcoal burner and Tsuburaya related some of the details of his work for "The Three Treasures."

One of the major jobs, he indicated, was filming the eruption of Mt. Fuji. This sequence provides the forceful climax for the picture.

A fifteen-foot replica of the mountain was built in the studio pool, the only area large enough for it in the cramped back lot. After the top was blown off with gunpowder, vats of molten lead were poured over the crater to simulate lava. The eruption and subsequent lava flow were picked up in slow motion with several cameras to obtain a variety of angles at one shooting.

"In such work as this, which calls for extreme slow motion, I often use a Debrie camera turning at 240 frames per second," he said.

The mythical reptile for the picture was made in miniature, but for several closeups with the star, a section was built "life size." Both models were moved by a complex system of overhead wires. On the screen the action is strikingly lifelike.

Tsuburaya brings to his present job years of experience in numerous fields of movie work. He began his career as a scenario writer and later was employed in the studio laboratory. Using the latter job as a stepping stone, he graduated to the camera where he worked for fifteen years.

"Several years before World War II, I was called upon to create and photograph a monkey-like monster which was supposed to fly through the air," he said. "I managed the job with some success and this assignment set the pattern for my future work."

After the war he continued working on science-fiction films, each with a new monster and new photographic problems. As he moved up the ladder of responsibility he took on more duties until today he is master of his own crew. Basically, however, he still is a director of photography.

Tsuburaya's years behind the camera and in the laboratory have given him an expert's knowledge of what effects can be achieved with camera speeds, lenses and the machines available in the printing room.

His study of chemicals, plastics, woods, metals and fabrics, the raw materials of his miniatures, provides him with an indication of what can be created from them and how they will appear on the screen.

"Because I am especially interested in the visual results," Tsuburaya said, "our pictures are plotted on a story board much in the same manner that cartoons are diagrammed in Hollywood. Here production kinks are worked out in advance."

We asked Tsuburaya where he gets the ideas for some of his weird creations. Usually they come from his own imagination, he reported. Even a dream or two has provided the basis for a picture.

What hideous monster is he planning for the cameras next?

"Perhaps my next nightmare will give me the answer," he said. ■

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SHOOTING FIRST FEATURE

Continued from Page 481

raphy, direction, film editing, script writing, and film laboratory work. It was here I obtained my first practical film making experience, as a set electrician. At the same time, I had opportunity to observe and learn about other film production techniques and it was at this time that I got interested in cinematography.

After I had assisted in the production of three feature-length films, I was sure that making motion pictures was the business for me and I decided to make it my career. There is no better experience than that acquired in actually working on film productions. When cinematographer Joseph Brun, ASC, was here in Puerto Rico shooting a documentary film, I joined his crew as lighting man; I knew that Brun was one of the top cinematographers in the industry, and that I could learn a lot about professional cinematography by working with him.

Following this, I went to New York where I attended a school for film and TV cameramen and techicians. When I returned to Puerteo Rico, I found opportunity awaiting me in making films for television; the local TV industry was just getting established and I decided it was a good time to start with them. I served as cameraman, producer, director and film editor — and this diversified work, plus my previous experience, increased my confidence.

So when sometime later I was approached by Mr. Luis Alberto Negro, an Uruguyan film director, to direct the photography of the first production of Codazos Films, Inc., I was pretty sure that I could do it. It was a real challenge for an aspiring cinematographer!

The company planned to buy equipment, lights, etc., and to shoot the picture on a very low budget. The necessary money was being raised through sale of hundred-dollar shares to members of a local radio program. I promised the shareholders to keep all production expenses low and to shoot scenes on a safety basis of at least three-to-one. The production was scheduled to take six weeks.

We bought a used Wall 35mm camera with sync motor, three 750's, one Deuce, eight clip-lights plus necessary cables and a homemade switching panel, and started shooting on April 10th. As Director of Photography I was in charge of camera operation and

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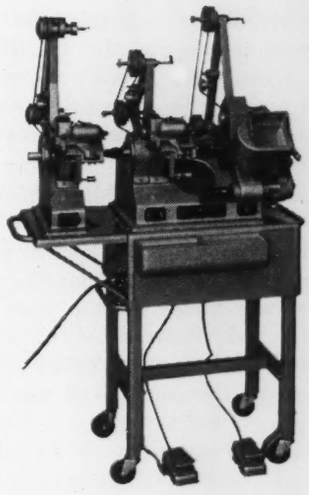

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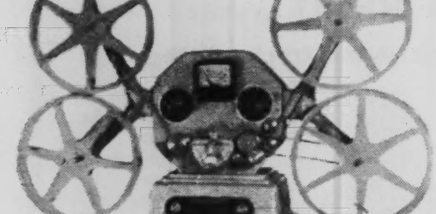

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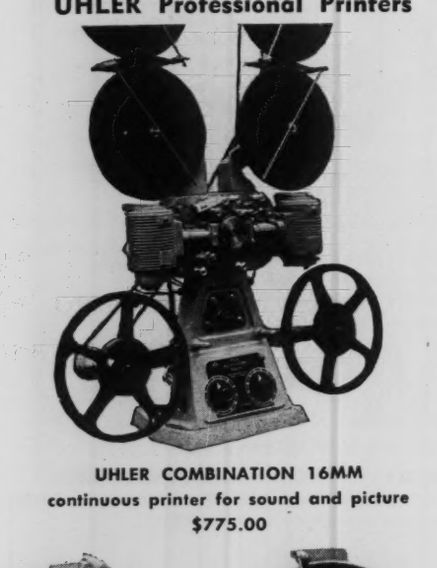

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lighting, and had a camera crew of four assistants.

Title of the production was *Barefoot* (Con Los Pies Descalzos). It was an Italian-type picture, similar to those directed by Rosellini. Almost all of the action was taken out of doors. The script called for rich, medium class, and poor people and the dwellings of same. Fortunately all these were to be found together in one small area. For the interiors, the company rented a small local studio.

Because of the demands of the script, I was constantly busy with my viewfinder composing scenes so that houses of the rich would not appear in scenes where only houses of the poor were needed, and vice-versa. A number of low-angle shots were purposely planned to picture the variety of the backgrounds. When the script called for night street exteriors, I rented two extra Deuces and connected them, along with the rest of our lighting equipment, to the power line terminals of the nearest dwelling available.

My greatest satisfaction came when the rushes were screened, for every scene came out just as I had planned it. Both the President of the Company and the Director of the Production were generous in their praise of the photographic quality and composition.

I was further elated when, after winding up production, I was told that only $16,000 of our budget was expended. When the picture is released to theatres, it will be the lowest budgeted feature production ever made in Puerto Rico. Less than thirty-eight 1000-ft. rolls of Eastman Plus-X and Tri-X film were used. Our camera was carefully inspected after every 500 feet of film was exposed, as a means of checking against negative scratching and possible mechanical defects. All scenes had been carefully planned before shooting began, and as a further money-saving precaution, camera operation, parallax, exposure and composition were checked and rechecked during rehearsals.

Perhaps one of our most valuable assets was the ever-shining tropical Puerto Rican sun with its high actinic values. No less important was the "fast shooting" know-how which I gained earlier while photographing half-hour television films.

All in all, photographing this — my first feature-length film — and the genuine, heart-warming approval of my work was a highly rewarding experience that bolsters my confidence for undertaking still greater cinematographic assignments in our growing local film industry. ■

HOW CONTRAST VIEWING GLASS IMPROVES PICTURE QUALITY

WHEN WE SEE on the screen a well-exposed scene, with good tonal or color rendition and perfect balance between highlights and shadows, invariably several instruments besides the camera were employed by the director of photography to achieve it. There was the exposure meter, a color temperature meter (if it was a color film), and a contrast viewing glass.

Of these, the viewing glass is the simplest; yet it is equally important because it is difficult for anyone to judge with the naked eye the contrast in a scene to be photographed. When we look at the shadows in a scene, our eye automatically adapts itself and we see detail that the film will not see. The viewing glass lowers the brightness of the scene so that the eye will not be able to see detail in shadows too dark to record on film.

The history of the viewing glass goes back farther than the photoelectric exposure meter, back to the days of color-blind ortho film. As the first photographic films were relatively insensitive to all colors but blue, in order to see a subject or scene to be photographed as it would appear on film it was only necessary to view it through a deep-blue viewing glass. All color as such became invisible through the glass and we saw the range of brightness of the scene as it would reproduce on film.

As black-and-white films were improved — made more sensitive — and with the introduction of color films, it became necessary to alter the filtering components of the viewing glass. When panchromatic film came into use, some photographers continued to use the deep-blue viewing glass because it rendered the scene in monochrome; but they found that the relative brightness did not always register on the film as it appeared through the glass. Medium blue no longer registered as almost white, nor bright red

as black, as these colors previously had on color-blind film. It therefore became necessary to develop a new viewing glass which rendered colors in approximate monotones comparable to the brightness range registered on the new panchromatic film. Thus the Panchromatic Viewing Glass was born.

With the introduction of daylight color film, the need for a complete new viewing glass for this medium was not anticipated, for all colors were expected to register on the film in their natural hues. However, the contrast range of daylight color film proved to be much shorter than that seen by the eye. It was not capable of correctly recording a scene in which there were both extreme highlights and deep shadows.

Among the first to meet this problem was Technicolor Corporation, which developed for color film photography the neutral contrast viewing glass. This is a filter which is neutral in color and is held to a density of 2.0, with a production tolerance of only plus or minus 5%.

When the cameraman looks at a scene through the viewing glass, the brightness reaching the eye is reduced sufficiently so that he can judge, not only the general appearance of the scene as it will appear on the film when photographed, but also determine whether the lighting contrast is too great to record successfully on color film. Should this be the case, and since he cannot increase the exposure enough to record the shadow detail satisfactory without over-exposing the highlights and burning them out, the obvious step is to direct more light into the shadows to modify the excessive contrasts.

Two important cameras used in the studios today—Mitchell and Technirama—have adaptations of the viewing glass built into the viewing systems. With the Mitchell, a panchromatic viewing glass is part of the optical viewer, which becomes operative when the camera is racked-over. The Technirama cameras have a neutral viewing glass, more generally referred to as an ND filter, in the camera's finder system.

In spite of these conveniences, however, the director of photography still has need for the popular little monocle-like viewing glass which he invariably wears suspended by a neck cord. It is in constant use whenever he is directing the placement of lights or reflectors.

With introduction of color film balanced for mazda light, a completely new vewing glass for the medium became necessary, because the film had incorporated into its emulsion correction components which balanced it to the yellower illumination of the mazda lamp, making it possible for the film to register colors comparable to the results achieved with daylight color film used in daylight.

When the eye views color under artificial light, it naturally adapts itself to the prevailing illumination with the result that colors appear very similar to the way they do in daylight. However, this adaptation is not complete; thus, where color rendition is critical, marked differences can be observed between appearance of the colors under artificial light and the way they reproduce in the color film. Much work is yet to be done in this direction to bring about development of a viewing glass that will render dependable results for directors of photography working with color film.

Color contrast viewing glasses can be of immeasurable aid to the 16mm professional and amateur cameraman, too. Whether he uses Kodachrome or Ansco Color, the use of a viewing glass can insure greater fidelity of color in the finished film. ■

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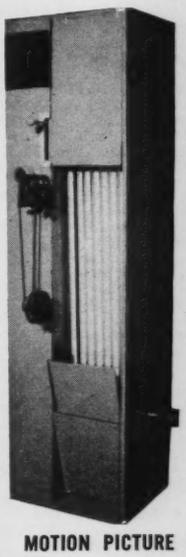

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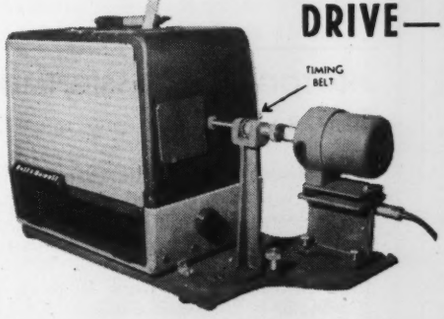

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There is more to make-up than simply coating the player's face with grease paint and powder to produce a satin-smooth complexion for the camera. Ever since the advent of motion pictures, cameramen and make-up artists have been comparing make-up to retouching in "still" portraiture. The comparison is a good one, but slightly inaccurate: in retouching, both the contour and texture of the facial areas are rendered more pleasing; in conventional make-up, we deal almost exclusively with complexion and texture, leaving the correction of objectionable contours almost entirely to the cinematographer and his lights.

That is all well enough; for the cinematographer can, by painting with light and shade, modify facial contours, accentuate good features and conceal or minimize bad ones to a remarkable extent. To conceal an undesirable protruding feature such as, for instance, a chin that is beginning to sag, he endeavors to keep that area in shadow. To minimize wrinkles, he throws additional, very soft light onto that portion of the face in order to eliminate wrinkle shadows.

In applying a "corrective" make-up, the make-up artist uses essentially the same means. Only instead of actual light and shadow, he applies lighter or darker make-up to produce essentially the same result. In the case of the sagging chin, he throws it, photographically, into shadow by applying a slightly darker shade of make-up to that area. In the case of wrinkles, he produces the effect of stronger, flatter lighting by applying a lighter shade of make-up to that area, so that even though the wrinkle, being in a physical depression, receives less light than the surrounding area of the face, it will, because of its lighter tone, reflect comparatively more light, bringing its photographic value into closer parity with the rest of the face.

If the corrective make-up is properly applied, it can be a really worthwhile help to the cinematographer's efforts at corrective lighting, for a well-applied corrective make-up should have much the same corrective effect regardless of the angle at which it is viewed or photographed, whereas the corrective lighting changes its effect in varying degrees as the actor moves about. Used together intelligently, these two means of correction should supplement each other perfectly, just as the still-photographer's lighting and the subsequent retouching done on his portrait negatives supplement each other. Corrective make-up is essentially a matter of skillfully retouching the subject before, rather than after the exposure is made.

But to do its work, the corrective make-up must be applied skillfully, and with a real understanding of what the make-up artist and cinematographer are trying to accomplish.

Perhaps the most common fault is permitting the shadowing or the highlighting to spread over adjoining areas where it is not needed. This often happens when the make-up man, after applying his corrective coloring, attempts to blend it in with the adjoining areas by stippling, patting or even rubbing the make-up. This may blend the two adjacent shades, but it also spreads the corrective coloring so broadly that all its effect is lost. ■

PHOTOGRAPHIC ASSIGNMENTS

Continued from Page 468

JOHN RUSSELL, ASC, "Markham"* (Revue Prods.) with Ray Milland.

WILLIAM SICKNER, ASC, BENJ. KLINE, ASC, "Bachelor Father"* (Bachelor Prods.) with John Forsythe.

JOHN WARREN, ASC, JOHN RUSSELL, ASC, "Coronado 9"* (Revue Prods.)

ELLIS THACKERY, ASC, "Tall Man"* (Revue Prods.) with Barry Sullivan; "Johnny Midnight"* (Revue Prods.)

BENJ. KLINE, ASC, "The Deputy"* (Revue Prods.) with Henry Fonda.

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WILLIAM SICKNER, ASC, "Whispering Smith"*

JACK MACKENZIE, ASC, "Checkmate"* (Revue Prods.)

TWENTIETH CENTURY-FOX

WILLIAM MELLOR, ASC, "The Big Gamble" (C'Scope & Color; Darryl Zanuck Prod.; shooting in Europe) with Stephen Boyd and Juliette Greco. Richard Fleischer, director.

LUCIEN BALLARD, ASC, "Desire in the Dust" (API: C'Scope; shooting in Baton Rouge) with Raymond Burr and Martha Hyer. William Claxton, producer-director.

Continued on Page 508

CLASSIFIED ADVERTISING

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See Ads on Pages 482 and 483
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Continued on Next Page

Classified Ads

Continued From Preceding Page

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LINWOOD DUNN, ASC, offers background of 28 years of experience as specialist cinematographer with RKO Studios to production companies for creative and unusual assignments in fields of special photographic effects, cinematography, equipment design and specialized laboratory techniques. Current assignment, "West Side Story." 1153 N. Highland Ave., Hollywood 38, Calif. Phone HOllywood 9-5808.

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PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 506

LEO TOVER, ASC, "Marriage-Go-Round" (C'Scope & DeLuxe color) with Susan Hayward and James Mason. Walter Lang, director.

HENRY CRONJAGER, "Squad Car" (API; shooting in Phoenix) with Vicki Raaf and Paul Bryar. Ed Leftwich, producer-director.

FLOYD CROSBY, ASC, "Freckles" (API; CinemaScope & Color) with Martin West and Carol Christensen. Andrew V. McLaglen, director.

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BORIS KAUFMAN, ASC, "Splendor in the Grass" (Newton Prod.) with Natalie Wood and Warren Beatty. Elia Kazan, director.

JACK CARDIFF, "Fanny" (Mansfield Prod.; shooting in Marseilles) with Leslie Caron and Maurice Chevalier. Joshua Logan, director.

HARRY STRADLING, ASC, "Parrish" (Shooting at Hartford, Conn.) with Troy Donahue and Claudette Colbert. Delmer Daves, director.

EDWIN DUPAR, ASC, "Hawaiian Eye"* with Anthony Eisley.

PEVERELL MARLEY, ASC, "A Fever in the Blood" with Efrem Zimbalist Jr. and Angie Dickinson. Vincent Sherman, director.

JOE BIROC, ASC, "Gold of the Seven Saints" (shooting in Moab, Utah) with Clint Walker and Roger Moore. Gordon Douglas, director.

RAY FERNSTROM, ASC, BURT GLENNON, "Sugarfoot"* with Will Hutchins.

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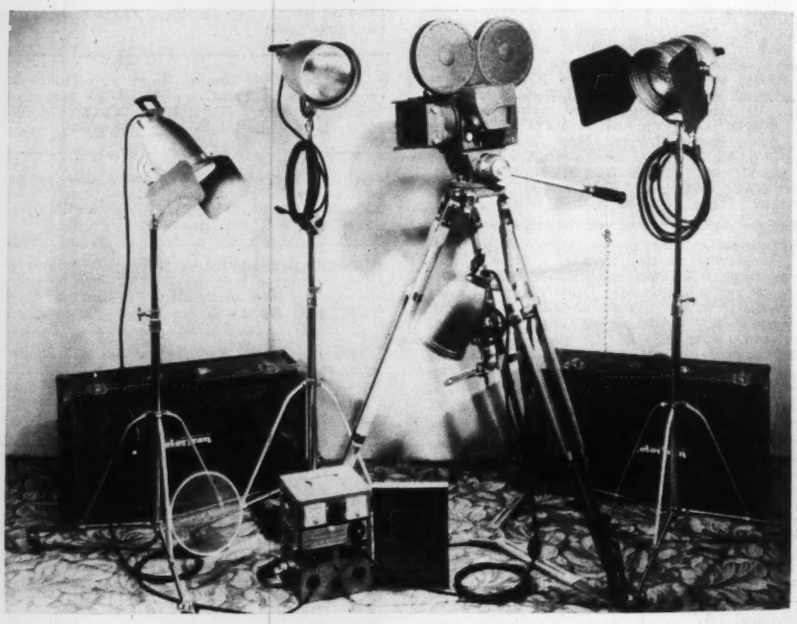

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